

$\chi_{c0}(1P)$  $I^G(J^{PC}) = 0^+(0^{++})$ 

NODE=M056

 **$\chi_{c0}(1P)$  MASS**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>3414.75± 0.31 OUR AVERAGE</b>				
3414.2 ± 0.5 ± 2.3	5.4k	UEHARA 08	BELL	$\gamma\gamma \rightarrow \chi_{c0} \rightarrow$ hadrons
3406 ± 7 ± 6	230	<sup>1</sup> ABE 07	BELL	$e^+ e^- \rightarrow J/\psi(c\bar{c})$
3414.21± 0.39±0.27		ABLIKIM 05G	BES2	$\psi(2S) \rightarrow \gamma\chi_{c0}$
3414.7 ± 0.7 ± 0.2		<sup>2</sup> ANDREOTTI 03	E835	$\bar{p}p \rightarrow \chi_{c0} \rightarrow \pi^0\pi^0$
3415.5 ± 0.4 ± 0.4	392	<sup>3</sup> BAGNASCO 02	E835	$\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$
3417.4 ± 1.8 ± 0.2		<sup>2</sup> AMBROGIANI 99B	E835	$\bar{p}p \rightarrow e^+ e^- \gamma$
3414.1 ± 0.6 ± 0.8		BAI 99B	BES	$\psi(2S) \rightarrow \gamma X$
3417.8 ± 0.4 ± 4		<sup>2</sup> GAISER 86	CBAL	$\psi(2S) \rightarrow \gamma X$
3416 ± 3 ± 4		<sup>4</sup> TANENBAUM 78	MRK1	$e^+ e^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3416.5 ± 3.0		EISENSTEIN 01	CLE2	$e^+ e^- \rightarrow e^+ e^- \chi_{c0}$
3422 ± 10		<sup>4</sup> BARTEL 78B	CNTR	$e^+ e^- \rightarrow J/\psi 2\gamma$
3415 ± 9		<sup>4</sup> BIDDICK 77	CNTR	$e^+ e^- \rightarrow \gamma X$

1 From a fit of the  $J/\psi$  recoil mass spectrum. Supersedes ABE,K 02 and ABE 04G.2 Using mass of  $\psi(2S) = 3686.0$  MeV.3 Recalculated by ANDREOTTI 05A, using the value of  $\psi(2S)$  mass from AULCHENKO 03.4 Mass value shifted by us by amount appropriate for  $\psi(2S)$  mass = 3686 MeV and  $J/\psi(1S)$  mass = 3097 MeV.

NODE=M056M

NODE=M056M

NODE=M056M;LINKAGE=EB

NODE=M056M;LINKAGE=C

NODE=M056M;LINKAGE=NW

NODE=M056M;LINKAGE=D

 **$\chi_{c0}(1P)$  WIDTH**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>10.3±0.6 OUR FIT</b>				
[10.4 ± 0.6 MeV OUR 2012 FIT]				
<b>10.5±0.8 OUR AVERAGE</b> Error includes scale factor of 1.1.				
10.6±1.9±2.6	5.4k	UEHARA 08	BELL	$\gamma\gamma \rightarrow \chi_{c0} \rightarrow$ hadrons
12.6 <sup>+1.5</sup> <sub>-1.6</sub> <sup>+0.9</sup> <sub>-1.1</sub>		ABLIKIM 05G	BES2	$\psi(2S) \rightarrow \gamma\chi_{c0}$
8.6 <sup>+1.7</sup> <sub>-1.3</sub> <sup>±0.1</sup>		ANDREOTTI 03	E835	$\bar{p}p \rightarrow \chi_{c0} \rightarrow \pi^0\pi^0$
9.7±1.0	392	<sup>5</sup> BAGNASCO 02	E835	$\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$
16.6 <sup>+5.2</sup> <sub>-3.7</sub> <sup>±0.1</sup>		AMBROGIANI 99B	E835	$\bar{p}p \rightarrow e^+ e^- \gamma$
14.3±2.0±3.0		BAI 98I	BES	$\psi(2S) \rightarrow \gamma\pi^+\pi^-$
13.5±3.3±4.2		GAISER 86	CBAL	$\psi(2S) \rightarrow \gamma X, \gamma\pi^0\pi^0$

5 Recalculated by ANDREOTTI 05A.

NODE=M056W

NODE=M056W

NEW

NODE=M056W;LINKAGE=AN

NODE=M056215;NODE=M056

 **$\chi_{c0}(1P)$  DECAY MODES**

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Scale factor/ Confidence level
<b>Hadronic decays</b>		
$\Gamma_1$ $2(\pi^+\pi^-)$	(2.25±0.19) %	
$\Gamma_2$ $\rho^0\pi^+\pi^-$	(8.8 ± 2.8) × 10 <sup>-3</sup>	
$\Gamma_3$ $\rho^0\rho^0$		
$\Gamma_4$ $f_0(980)f_0(980)$	(6.6 ± 2.1) × 10 <sup>-4</sup>	
$\Gamma_5$ $\pi^+\pi^-\pi^0\pi^0$	(3.3 ± 0.4) %	
$\Gamma_6$ $\rho^+\pi^-\pi^0 + \text{c.c.}$	(2.8 ± 0.4) %	
$\Gamma_7$ $4\pi^0$	(3.3 ± 0.4) × 10 <sup>-3</sup>	
$\Gamma_8$ $\pi^+\pi^-K^+K^-$	(1.77 ± 0.15) %	
$\Gamma_9$ $K_0^*(1430)^0\bar{K}_0^*(1430)^0 \rightarrow \pi^+\pi^-K^+K^-$	(9.8 ± 4.0) × 10 <sup>-4</sup>	
$\Gamma_{10}$ $K_0^*(1430)^0\bar{K}_2^*(1430)^0 + \text{c.c.} \rightarrow \pi^+\pi^-K^+K^-$	(8.0 ± 2.0) × 10 <sup>-4</sup>	
$\Gamma_{11}$ $K_1(1270)^+K^- + \text{c.c.} \rightarrow \pi^+\pi^-K^+K^-$	(6.2 ± 1.9) × 10 <sup>-3</sup>	

NODE=M056;CLUMP=A

DESIG=3

DESIG=9

DESIG=54

DESIG=20

DESIG=61

DESIG=62

DESIG=70

DESIG=5

DESIG=31

DESIG=32

DESIG=33

$\Gamma_{12}$	$K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-$	$< 2.7 \times 10^{-3}$	CL=90%	DESIG=34
$\Gamma_{13}$	$f_0(980) f_0(980)$	$(1.6 \begin{array}{l} +1.0 \\ -0.9 \end{array}) \times 10^{-4}$		DESIG=23
$\Gamma_{14}$	$f_0(980) f_0(2200)$	$(7.9 \begin{array}{l} +2.0 \\ -2.5 \end{array}) \times 10^{-4}$		DESIG=24
$\Gamma_{15}$	$f_0(1370) f_0(1370)$	$< 2.7 \times 10^{-4}$	CL=90%	DESIG=25
$\Gamma_{16}$	$f_0(1370) f_0(1500)$	$< 1.7 \times 10^{-4}$	CL=90%	DESIG=26
$\Gamma_{17}$	$f_0(1370) f_0(1710)$	$(6.7 \begin{array}{l} +3.5 \\ -2.3 \end{array}) \times 10^{-4}$		DESIG=27
$\Gamma_{18}$	$f_0(1500) f_0(1370)$	$< 1.3 \times 10^{-4}$	CL=90%	DESIG=28
$\Gamma_{19}$	$f_0(1500) f_0(1500)$	$< 5 \times 10^{-5}$	CL=90%	DESIG=29
$\Gamma_{20}$	$f_0(1500) f_0(1710)$	$< 7 \times 10^{-5}$	CL=90%	DESIG=30
$\Gamma_{21}$	$K^+ K^- \pi^+ \pi^- \pi^0$	$(1.12 \pm 0.27) \%$		DESIG=75
$\Gamma_{22}$	$K^+ K^- \pi^0 \pi^0$	$(5.5 \pm 0.9) \times 10^{-3}$		DESIG=63
$\Gamma_{23}$	$K^+ \pi^- K^0 \pi^0 + \text{c.c.}$	$(2.47 \pm 0.33) \%$		DESIG=65
$\Gamma_{24}$	$\rho^+ K^- K^0 + \text{c.c.}$	$(1.20 \pm 0.21) \%$		DESIG=66
$\Gamma_{25}$	$K^*(892)^- K^+ \pi^0 \rightarrow K^+ \pi^- K^0 \pi^0 + \text{c.c.}$	$(4.6 \pm 1.2) \times 10^{-3}$		DESIG=67
$\Gamma_{26}$	$K_S^0 K_S^0 \pi^+ \pi^-$	$(5.7 \pm 1.1) \times 10^{-3}$		DESIG=41
$\Gamma_{27}$	$K^+ K^- \eta \pi^0$	$(3.0 \pm 0.7) \times 10^{-3}$		DESIG=68
$\Gamma_{28}$	$3(\pi^+ \pi^-)$	$(1.20 \pm 0.18) \%$		DESIG=4
$\Gamma_{29}$	$K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.}$	$(7.3 \pm 1.6) \times 10^{-3}$		DESIG=10
$\Gamma_{30}$	$K^*(892)^0 \bar{K}^*(892)^0$	$(1.7 \pm 0.6) \times 10^{-3}$		DESIG=21
$\Gamma_{31}$	$\pi\pi$	$(8.5 \pm 0.4) \times 10^{-3}$		DESIG=18
$\Gamma_{32}$	$\pi^0 \eta$	$< 1.9 \times 10^{-4}$		DESIG=35
$\Gamma_{33}$	$\pi^0 \eta'$	$< 1.2 \times 10^{-3}$		DESIG=36
$\Gamma_{34}$	$\eta\eta$	$(3.01 \pm 0.20) \times 10^{-3}$		DESIG=13
$\Gamma_{35}$	$\eta\eta'$	$< 2.3 \times 10^{-4}$	CL=90%	DESIG=37
$\Gamma_{36}$	$\eta'\eta'$	$(1.99 \pm 0.22) \times 10^{-3}$		DESIG=46
$\Gamma_{37}$	$\omega\omega$	$(9.6 \pm 1.1) \times 10^{-4}$		DESIG=22
$\Gamma_{38}$	$\omega\phi$	$(1.17 \pm 0.22) \times 10^{-4}$		DESIG=76
$\Gamma_{39}$	$K^+ K^-$	$(5.98 \pm 0.34) \times 10^{-3}$		DESIG=2
$\Gamma_{40}$	$K_S^0 K_S^0$	$(3.10 \pm 0.18) \times 10^{-3}$		DESIG=15
$\Gamma_{41}$	$\pi^+ \pi^- \eta$	$< 2.0 \times 10^{-4}$	CL=90%	DESIG=50
$\Gamma_{42}$	$\pi^+ \pi^- \eta'$	$< 4 \times 10^{-4}$	CL=90%	DESIG=53
$\Gamma_{43}$	$\bar{K}^0 K^+ \pi^- + \text{c.c.}$	$< 9 \times 10^{-5}$	CL=90%	DESIG=17
$\Gamma_{44}$	$K^+ K^- \pi^0$	$< 6 \times 10^{-5}$	CL=90%	DESIG=47
$\Gamma_{45}$	$K^+ K^- \eta$	$< 2.2 \times 10^{-4}$	CL=90%	DESIG=51
$\Gamma_{46}$	$K^+ K^- K_S^0 K_S^0$	$(1.4 \pm 0.5) \times 10^{-3}$		DESIG=42
$\Gamma_{47}$	$K^+ K^- K^+ K^-$	$(2.77 \pm 0.29) \times 10^{-3}$		DESIG=14
$\Gamma_{48}$	$K^+ K^- \phi$	$(9.6 \pm 2.5) \times 10^{-4}$		DESIG=44
$\Gamma_{49}$	$\phi\phi$	$(7.9 \pm 0.8) \times 10^{-4}$		DESIG=16
$\Gamma_{50}$	$p\bar{p}$	$(2.13 \pm 0.12) \times 10^{-4}$		DESIG=11
$\Gamma_{51}$	$p\bar{p}\pi^0$	$(6.9 \pm 0.7) \times 10^{-4}$	S=1.2	DESIG=48
$\Gamma_{52}$	$p\bar{p}\eta$	$(3.5 \pm 0.4) \times 10^{-4}$		DESIG=52
$\Gamma_{53}$	$p\bar{p}\omega$	$(5.2 \pm 0.6) \times 10^{-4}$		DESIG=69
$\Gamma_{54}$	$p\bar{p}\phi$	$(6.0 \pm 1.4) \times 10^{-5}$		DESIG=74
$\Gamma_{55}$	$p\bar{p}\pi^+ \pi^-$	$(2.1 \pm 0.7) \times 10^{-3}$	S=1.4	DESIG=8
$\Gamma_{56}$	$p\bar{p}\pi^0 \pi^0$	$(1.03 \pm 0.28) \times 10^{-3}$		DESIG=64
$\Gamma_{57}$	$p\bar{p}K^+ K^- (\text{non-resonant})$	$(1.21 \pm 0.26) \times 10^{-4}$		DESIG=71
$\Gamma_{58}$	$p\bar{p}K_S^0 K_S^0$	$< 8.8 \times 10^{-4}$	CL=90%	DESIG=40
$\Gamma_{59}$	$p\bar{n}\pi^-$	$(1.12 \pm 0.31) \times 10^{-3}$		DESIG=43
$\Gamma_{60}$	$\Lambda\bar{\Lambda}$	$(3.3 \pm 0.4) \times 10^{-4}$		DESIG=19
$\Gamma_{61}$	$\Lambda\bar{\Lambda}\pi^+ \pi^-$	$< 4.0 \times 10^{-3}$	CL=90%	DESIG=38
$\Gamma_{62}$	$K^+ \bar{p}\Lambda + \text{c.c.}$	$(1.24 \pm 0.12) \times 10^{-3}$	S=1.3	DESIG=49
$\Gamma_{63}$	$K^+ p\Lambda(1520) + \text{c.c.}$	$(2.9 \pm 0.7) \times 10^{-4}$		DESIG=72
$\Gamma_{64}$	$\Lambda(1520)\bar{\Lambda}(1520)$	$(3.1 \pm 1.2) \times 10^{-4}$		DESIG=73
$\Gamma_{65}$	$\Sigma^0 \bar{\Sigma}^0$	$(4.1 \pm 0.7) \times 10^{-4}$		DESIG=58
$\Gamma_{66}$	$\Sigma^+ \bar{\Sigma}^-$	$(3.0 \pm 0.7) \times 10^{-4}$		DESIG=59
$\Gamma_{67}$	$\Xi^0 \bar{\Xi}^0$	$(3.1 \pm 0.8) \times 10^{-4}$		DESIG=60
$\Gamma_{68}$	$\Xi^- \bar{\Xi}^+$	$(4.8 \pm 0.7) \times 10^{-4}$		DESIG=39

**Radiative decays**

$\Gamma_{69}$	$\gamma J/\psi(1S)$	( $1.30 \pm 0.07$ ) %			
$\Gamma_{70}$	$\gamma\rho^0$	< 9	$\times 10^{-6}$	CL=90%	DESIG=6
$\Gamma_{71}$	$\gamma\omega$	< 8	$\times 10^{-6}$	CL=90%	DESIG=55
$\Gamma_{72}$	$\gamma\phi$	< 6	$\times 10^{-6}$	CL=90%	DESIG=56
$\Gamma_{73}$	$\gamma\gamma$	( $2.25 \pm 0.17$ ) $\times 10^{-4}$			DESIG=57

NODE=M056;CLUMP=B  
 DESIG=6  
 DESIG=55  
 DESIG=56  
 DESIG=57  
 DESIG=7

**CONSTRAINED FIT INFORMATION**

A multiparticle fit to  $\chi_{c1}(1P)$ ,  $\chi_{c0}(1P)$ ,  $\chi_{c2}(1P)$ , and  $\psi(2S)$  with 4 total widths, a partial width, 25 combinations of partial widths obtained from integrated cross section, and 84 branching ratios uses 227 measurements to determine 49 parameters. The overall fit has a  $\chi^2 = 325.4$  for 178 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta p_i \delta p_j \rangle / (\delta p_i \cdot \delta p_j)$ , in percent, from the fit to parameters  $p_i$ , including the branching fractions,  $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$ .

$x_2$	26								
$x_8$	19	5							
$x_{29}$	9	2	30						
$x_{31}$	22	6	23	8					
$x_{34}$	13	3	14	5	28				
$x_{39}$	19	5	20	7	35	23			
$x_{40}$	21	6	21	8	34	22	29		
$x_{47}$	12	3	12	5	19	12	16	16	
$x_{49}$	14	4	13	5	20	13	17	17	10
$x_{50}$	-1	0	-1	0	-11	-10	-3	-2	-1
$x_{60}$	8	2	9	3	17	11	14	13	7
$x_{69}$	10	3	11	4	26	18	19	18	10
$x_{73}$	-24	-6	-17	-10	-9	-4	-10	-14	-8
$\Gamma$	-14	-4	-11	-5	-13	-8	-11	-13	-7
	$x_1$	$x_2$	$x_8$	$x_{29}$	$x_{31}$	$x_{34}$	$x_{39}$	$x_{40}$	$x_{47}$
									$x_{49}$
$x_{60}$		-1							
$x_{69}$		-40	9						
$x_{73}$		-2	-3	3					
$\Gamma$		3	-5	-11	-59				
	$x_{50}$	$x_{60}$	$x_{69}$	$x_{73}$					

 **$\chi_{c0}(1P)$  PARTIAL WIDTHS**

$$\chi_{c0}(1P) \Gamma(i) \Gamma(\gamma J/\psi(1S)) / \Gamma(\text{total})$$

$\Gamma(p\bar{p}) \times \Gamma(\gamma J/\psi(1S)) / \Gamma_{\text{total}}$	$\Gamma_{50} \Gamma_{69} / \Gamma$
VALUE (eV)	DOCUMENT ID

NODE=M056217

NODE=M056223

NODE=M056G1

NODE=M056G1

NEW

**28.6 ± 2.4 OUR FIT**

[ $27.1 \pm 2.4$  eV OUR 2012 FIT]

• • • We do not use the following data for averages, fits, limits, etc. • • •

26.6 ± 2.6 ± 1.4	392	6,7 BAGNASCO 02 E835	$\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$
$48.7^{+11.3}_{-8.9} \pm 2.4$		6,7 AMBROGIANI 99B E835	$\bar{p}p \rightarrow \gamma J/\psi$

<sup>6</sup> Calculated by us using  $B(J/\psi(1S) \rightarrow e^+ e^-) = 0.0593 \pm 0.0010$ .

<sup>7</sup> Values in  $(\Gamma(p\bar{p}) \times \Gamma(\gamma J/\psi(1S)) / \Gamma_{\text{total}})$  and  $(\Gamma(p\bar{p}) / \Gamma_{\text{total}} \times \Gamma(\gamma J/\psi(1S)) / \Gamma_{\text{total}})$  are not independent. The latter is used in the fit since it is less correlated to the total width.

NODE=M056G;LINKAGE=7A

NODE=M056G;LINKAGE=KS

$\chi_{c0}(1P) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$ 

$\Gamma(2(\pi^+\pi^-)) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_1\Gamma_{73}/\Gamma$		
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>52 ± 4 OUR FIT</b>				
<b>49 ± 10 OUR AVERAGE</b>		Error includes scale factor of 1.8.		

44.7 ± 3.6 ± 4.9      3.6k      UEHARA      08      BELL       $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(\pi^+\pi^-)$   
 75 ± 13 ± 8      EISENSTEIN      01      CLE2       $e^+e^- \rightarrow e^+e^-\chi_{c0}$

$\Gamma(\rho^0\rho^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_3\Gamma_{73}/\Gamma$			
VALUE (eV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<12	90	<252	UEHARA	08	BELL $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(\pi^+\pi^-)$

$\Gamma(\pi^+\pi^-K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_8\Gamma_{73}/\Gamma$		
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>41 ± 4 OUR FIT</b>				
<b>38.8 ± 3.7 ± 4.7</b>	1.7k	UEHARA	08	BELL $\gamma\gamma \rightarrow \chi_{c0} \rightarrow K^+K^-\pi^+\pi^-$

$\Gamma(K^+K^-\pi^+\pi^-\pi^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{21}\Gamma_{73}/\Gamma$		
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>26 ± 4 ± 4</b>	1094	DEL-AMO-SA..11M	BABR	$\gamma\gamma \rightarrow K^+K^-\pi^+\pi^-\pi^0$

$\Gamma(K^+\bar{K}^*(892)^0\pi^- + \text{c.c.}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{29}\Gamma_{73}/\Gamma$		
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>17 ± 4 OUR FIT</b>				
<b>16.7 ± 6.1 ± 3.0</b>	495 ± 182	UEHARA	08	BELL $\gamma\gamma \rightarrow \chi_{c0} \rightarrow K^+K^-\pi^+\pi^-$

$\Gamma(K^*(892)^0\bar{K}^*(892)^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{30}\Gamma_{73}/\Gamma$			
VALUE (eV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<6	90	<148	UEHARA	08	BELL $\gamma\gamma \rightarrow \chi_{c0} \rightarrow K^+K^-\pi^+\pi^-$

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{31}\Gamma_{73}/\Gamma$		
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>19.6 ± 1.4 OUR FIT</b>				
[19.7 ± 1.4 eV OUR 2012 FIT]				
<b>23 ± 5 OUR AVERAGE</b>				

29.7 <sup>+17.4</sup> <sub>-12.0</sub> ± 4.8	103 <sup>+60</sup> <sub>-42</sub>	8	UEHARA	09	BELL $e^+e^- \rightarrow e^+e^-\pi^0\pi^0$
22.7 ± 3.2 ± 3.5	129 ± 18	9	NAKAZAWA	05	BELL $e^+e^- \rightarrow e^+e^-\pi^+\pi^-$

8 We multiplied the measurement by 3 to convert from  $\pi^0\pi^0$  to  $\pi\pi$ . Interference with the continuum included.

9 We have multiplied  $\pi^+\pi^-$  measurement by 3/2 to obtain  $\pi\pi$ .

$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{34}\Gamma_{73}/\Gamma$		
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>9.4 ± 2.3 ± 1.2</b>	22	10	UEHARA	10A      BELL $10.6 e^+e^- \rightarrow e^+e^-\eta\eta$

10 Interference with the continuum not included.

$\Gamma(\omega\omega) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{37}\Gamma_{73}/\Gamma$		
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<3.9      90      11 LIU      12B BELL $\gamma\gamma \rightarrow 2(\pi^+\pi^-\pi^0)$				

11 Using  $B(\omega \rightarrow \pi^+\pi^-\pi^0) = (89.2 \pm 0.7)\%$ .

$\Gamma(\omega\phi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{38}\Gamma_{73}/\Gamma$		
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.34      90      12 LIU      12B BELL $\gamma\gamma \rightarrow K^+K^-\pi^+\pi^-\pi^0$				

12 Using  $B(\phi \rightarrow K^+K^-) = (48.9 \pm 0.5)\%$  and  $B(\omega \rightarrow \pi^+\pi^-\pi^0) = (89.2 \pm 0.7)\%$ .

$\Gamma(K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{39}\Gamma_{73}/\Gamma$		
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>13.9 ± 1.1 OUR FIT</b>				
[14.0 ± 1.1 eV OUR 2012 FIT]				

**14.3 ± 1.6 ± 2.3**      153 ± 17      NAKAZAWA 05      BELL       $10.6 e^+e^- \rightarrow e^+e^-K^+K^-$

NODE=M056224

NODE=M056G2

NODE=M056G2

NODE=M056G08  
NODE=M056G08

NODE=M056G09  
NODE=M056G09

NODE=M056G10  
NODE=M056G10

NODE=M056G3  
NODE=M056G3  
NEW

NODE=M056G3;LINKAGE=UE

NODE=M056G;LINKAGE=NA

NODE=M056G06  
NODE=M056G06

NODE=M056G02;LINKAGE=LI

NODE=M056G03  
NODE=M056G03

NODE=M056G4  
NODE=M056G4  
NEW

$\Gamma(K_S^0 K_S^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{40}\Gamma_{73}/\Gamma$			
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>7.2 ± 0.5 OUR FIT</b> [7.3 ± 0.5 eV OUR 2012 FIT]					NODE=M056G5 NODE=M056G5 NEW
<b>7.00±0.65±0.71</b>	134 ± 12	CHEN	07B BELL	$e^+ e^- \rightarrow e^+ e^- \chi_{c0}$	
$\Gamma(K^+ K^- K^+ K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{47}\Gamma_{73}/\Gamma$			
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>6.4±0.7 OUR FIT</b>					NODE=M056G11 NODE=M056G11
<b>7.9±1.3±1.1</b>	215 ± 36	UEHARA	08	BELL $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(K^+ K^-)$	
$\Gamma(\phi\phi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_{49}\Gamma_{73}/\Gamma$			
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>1.82±0.19 OUR FIT</b> [1.89 ± 0.22 eV OUR 2012 FIT]					NODE=M056G12 NODE=M056G12 NEW
<b>1.7 ± 0.4 OUR AVERAGE</b> [2.3 ± 1.0 eV OUR 2012 AVERAGE]					NEW
<b>1.72±0.33±0.14</b>	56 ± 11	13 LIU	12B BELL	$\gamma\gamma \rightarrow 2(K^+ K^-)$	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.3 ± 0.9	23.6 ± 9.6	UEHARA	08	BELL $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(K^+ K^-)$	
13 Supersedes UEHARA 08. Using $B(\phi \rightarrow K^+ K^-) = (48.9 \pm 0.5)\%$ .					

### $\chi_{c0}(1P)$ BRANCHING RATIOS

#### HADRONIC DECAYS

$\Gamma(2(\pi^+\pi^-))/\Gamma_{\text{total}}$		$\Gamma_1/\Gamma$			
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>0.0225±0.0019 OUR FIT</b> [0.0226 ± 0.0019 OUR 2012 FIT]					NODE=M056R2 NODE=M056R2 NEW
$\Gamma(\rho^0\pi^+\pi^-)/\Gamma(2(\pi^+\pi^-))$		$\Gamma_2/\Gamma_1$			
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>0.39±0.12 OUR FIT</b>					NODE=M056R54 NODE=M056R54
<b>0.39±0.12</b>		TANENBAUM 78	MRK1	$\psi(2S) \rightarrow \gamma\chi_{c0}$	
$\Gamma(\rho^0\pi^+\pi^-)/\Gamma_{\text{total}}$		$\Gamma_2/\Gamma$			
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>0.0088±0.0028 OUR FIT</b>					NODE=M056R9 NODE=M056R9
$\Gamma(f_0(980)f_0(980))/\Gamma_{\text{total}}$		$\Gamma_4/\Gamma$			
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>6.6±2.1 OUR AVERAGE</b> [(6.7 ± 2.1) × $10^{-4}$ OUR 2012 AVERAGE]					NODE=M056R24 NODE=M056R24 NEW
<b>6.6±2.1±0.2</b>	36 ± 9	14 ABLIKIM	04G BES	$\psi(2S) \rightarrow \gamma 2\pi^+ 2\pi^-$	
14 ABLIKIM 04G reports $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980)f_0(980))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (6.5 \pm 1.6 \pm 1.3) \times 10^{-5}$ which we divide by our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					
$\Gamma(\pi^+\pi^-\pi^0\pi^0)/\Gamma_{\text{total}}$		$\Gamma_5/\Gamma$			
VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>3.3±0.4 OUR AVERAGE</b> [(3.4 ± 0.4)% OUR 2012 AVERAGE]					NODE=M056R62 NODE=M056R62 NEW
<b>3.3±0.4±0.1</b>	1751.4	15 HE	08B CLEO	$e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$	
15 HE 08B reports $3.54 \pm 0.10 \pm 0.43 \pm 0.18 \%$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+\pi^-\pi^0\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					
$\Gamma(\rho^+\pi^-\pi^0+c.c.)/\Gamma_{\text{total}}$		$\Gamma_6/\Gamma$			
VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>2.8±0.4 OUR AVERAGE</b> [(2.9 ± 0.4)% OUR 2012 AVERAGE]					NODE=M056R63 NODE=M056R63 NEW
<b>2.8±0.4±0.1</b>	1358.5	16,17 HE	08B CLEO	$e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$	
16 HE 08B reports $3.04 \pm 0.18 \pm 0.42 \pm 0.16 \%$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \rho^+\pi^-\pi^0 + c.c.)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					
17 Calculated by us. We have added the values from HE 08B for $\rho^+\pi^-\pi^0$ and $\rho^-\pi^+\pi^0$ decays assuming uncorrelated statistical and fully correlated systematic uncertainties.					

NODE=M056R63;LINKAGE=OC

$\Gamma(4\pi^0)/\Gamma_{\text{total}}$					$\Gamma_7/\Gamma$
VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>3.3±0.4±0.1</b>	3296	18 ABLIKIM	11A BES3	$e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$	

18 ABLIKIM 11A reports  $(3.34 \pm 0.06 \pm 0.44) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow 4\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}$					$\Gamma_8/\Gamma$
VALUE (units $10^{-3}$ )	DOCUMENT ID				
<b>17.7±1.5 OUR FIT</b> [( $17.9 \pm 1.5$ ) $\times 10^{-3}$ OUR 2012 FIT]					

$\Gamma(K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.})/\Gamma(\pi^+ \pi^- K^+ K^-)$					$\Gamma_{29}/\Gamma_8$
VALUE	DOCUMENT ID	TECN	COMMENT		
<b>0.41±0.09 OUR FIT</b>					
<b>0.41±0.10</b>	TANENBAUM 78	MRK1	$\psi(2S) \rightarrow \gamma \chi_{c0}$		

$\Gamma(K_0^*(1430)^0 \bar{K}_0^*(1430)^0 \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}$					$\Gamma_9/\Gamma$
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>9.8<sup>+4.0</sup><sub>-2.8</sub> OUR AVERAGE</b> [( $9.9^{+4.0}_{-2.9}$ ) $\times 10^{-4}$ OUR 2012 AVERAGE]					

<b>9.8<sup>+3.6</sup><sub>-2.8</sub>±0.3</b>	83	19 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$	
19 ABLIKIM 05Q reports $(10.44 \pm 2.37^{+3.05}_{-1.90}) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K_0^*(1430)^0 \bar{K}_0^*(1430)^0 \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}]$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(K_0^*(1430)^0 \bar{K}_2^*(1430)^0 + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}$					$\Gamma_{10}/\Gamma$
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>8.0<sup>+2.0</sup><sub>-2.4</sub> OUR AVERAGE</b> [( $8.1^{+2.0}_{-2.4}$ ) $\times 10^{-4}$ OUR 2012 AVERAGE]					

<b>8.0<sup>+1.9</sup><sub>-2.4</sub>±0.2</b>	62	20 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$	
20 ABLIKIM 05Q reports $(8.49 \pm 1.66^{+1.32}_{-1.99}) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K_0^*(1430)^0 \bar{K}_2^*(1430)^0 + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}]$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(K_1(1270)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}$					$\Gamma_{11}/\Gamma$
VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>6.2±1.9 OUR AVERAGE</b> [( $6.3 \pm 1.9$ ) $\times 10^{-3}$ OUR 2012 AVERAGE]					

<b>6.2<sup>+1.9</sup><sub>-1.8</sub>±0.2</b>	68	21 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$	
21 ABLIKIM 05Q reports $(6.66 \pm 1.31^{+1.60}_{-1.51}) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K_1(1270)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}]$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. The measurement assumes $B(K_1(1270) \rightarrow K\rho(770)) = 42 \pm 6\%$ .					

$\Gamma(K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}$					$\Gamma_{12}/\Gamma$
VALUE (units $10^{-3}$ )	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;2.7</b>	90	22 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$	
22 ABLIKIM 05Q reports $< 2.85 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}]$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . The measurement assumes $B(K_1(1400) \rightarrow K^*(892)\pi) = 94 \pm 6\%$ .					

NODE=M056R71  
NODE=M056R71

NODE=M056R71;LINKAGE=AB

NODE=M056R3  
NODE=M056R3

NEW

NODE=M056R55  
NODE=M056R55

NODE=M056R36  
NODE=M056R36

NEW

NODE=M056R37  
NODE=M056R37

NEW

NODE=M056R38  
NODE=M056R38

NEW

NODE=M056R38;LINKAGE=AB

NODE=M056R39  
NODE=M056R39

NODE=M056R39;LINKAGE=AB

$\Gamma(f_0(980)f_0(980))/\Gamma_{\text{total}}$					$\Gamma_{13}/\Gamma$
VALUE (units $10^{-5}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b><math>16^{+10}_{-9}</math> OUR AVERAGE</b>	$[(16^{+11}_{-9}) \times 10^{-5}$ OUR 2012 AVERAGE]				

**$16^{+10}_{-9} \pm 1$**       28      23 ABLIKIM      05Q BES2       $\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$   
 23 ABLIKIM 05Q reports  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980)f_0(980))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (1.59 \pm 0.50^{+0.89}_{-0.72}) \times 10^{-5}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. One of the  $f_0(980)$  mesons is identified via decay to  $\pi^+\pi^-$  while the other via  $K^+K^-$  decay.

$\Gamma(f_0(980)f_0(2200))/\Gamma_{\text{total}}$					$\Gamma_{14}/\Gamma$
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b><math>7.9^{+2.0}_{-2.5}</math> OUR AVERAGE</b>	$[(8.0^{+2.0}_{-2.5}) \times 10^{-4}$ OUR 2012 AVERAGE]				

**$7.9^{+2.0}_{-2.5} \pm 0.2$**       77      24 ABLIKIM      05Q BES2       $\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$   
 24 ABLIKIM 05Q reports  $(8.42 \pm 1.42^{+1.65}_{-2.29}) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980)f_0(2200))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. The  $f_0$  mesons are identified via  $f_0(980) \rightarrow \pi^+\pi^-$  and  $f_0(2200) \rightarrow K^+K^-$  decays.

$\Gamma(f_0(1370)f_0(1370))/\Gamma_{\text{total}}$					$\Gamma_{15}/\Gamma$
VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;2.7 (CL = 90%)</b>	$[<2.8 \times 10^{-4}$ (CL = 90%) OUR 2012 BEST LIMIT]				

**<2.7**      90      25 ABLIKIM      05Q BES2       $\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$   
 25 ABLIKIM 05Q reports  $< 2.9 \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370)f_0(1370))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ . One of the  $f_0(1370)$  mesons is identified via decay to  $\pi^+\pi^-$  while the other via  $K^+K^-$  decay. Both branching fractions for these  $f_0$  decays are implicitly included in the quoted result.

$\Gamma(f_0(1370)f_0(1500))/\Gamma_{\text{total}}$					$\Gamma_{16}/\Gamma$
VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;1.7</b>	$<1.8 \times 10^{-4}$ (CL = 90%) OUR 2012 BEST LIMIT]				

**<1.7**      90      26 ABLIKIM      05Q BES2       $\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$   
 26 ABLIKIM 05Q reports  $< 1.8 \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370)f_0(1500))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ . The  $f_0$  mesons are identified via  $f_0(1370) \rightarrow \pi^+\pi^-$  and  $f_0(1500) \rightarrow K^+K^-$  decays. Both branching fractions for these  $f_0$  decays are implicitly included in the quoted result.

$\Gamma(f_0(1370)f_0(1710))/\Gamma_{\text{total}}$					$\Gamma_{17}/\Gamma$
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b><math>6.7^{+3.5}_{-2.3}</math> OUR AVERAGE</b>	$[(6.8^{+4.0}_{-2.4}) \times 10^{-4}$ OUR 2012 AVERAGE]				

**$6.7^{+3.5}_{-2.3} \pm 0.2$**       61      27 ABLIKIM      05Q BES2       $\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$   
 27 ABLIKIM 05Q reports  $(7.12 \pm 1.85^{+3.28}_{-1.68}) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370)f_0(1710))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. The  $f_0$  mesons are identified via  $f_0(1370) \rightarrow \pi^+\pi^-$  and  $f_0(1710) \rightarrow K^+K^-$  decays. Both branching fractions for these  $f_0$  decays are implicitly included in the quoted result.

NODE=M056R28  
NODE=M056R28

NEW

NODE=M056R28;LINKAGE=AB

NODE=M056R29  
NODE=M056R29

NEW

NODE=M056R29;LINKAGE=AB

NODE=M056R30  
NODE=M056R30

NODE=M056R30;LINKAGE=AB

NODE=M056R31  
NODE=M056R31

NODE=M056R31;LINKAGE=AB

NODE=M056R32  
NODE=M056R32

NEW

NODE=M056R32;LINKAGE=AB

$\Gamma(f_0(1500)f_0(1370))/\Gamma_{\text{total}}$

VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT
<1.3	90	28 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$
28 ABLIKIM 05Q reports $< 1.4 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500)f_0(1370))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ . The $f_0$ mesons are identified via $f_0(1500) \rightarrow \pi^+\pi^-$ and $f_0(1370) \rightarrow K^+K^-$ decays. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result.				

$\Gamma_{18}/\Gamma$

NODE=M056R33  
NODE=M056R33

NODE=M056R33;LINKAGE=AB

$\Gamma(f_0(1500)f_0(1500))/\Gamma_{\text{total}}$

VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT
<0.5	90	29 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$
29 ABLIKIM 05Q reports $< 0.55 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500)f_0(1500))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ . One of the $f_0(1500)$ is identified via decay to $\pi^+\pi^-$ while the other via $K^+K^-$ decay. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result.				

$\Gamma_{19}/\Gamma$

NODE=M056R34  
NODE=M056R34

NODE=M056R34;LINKAGE=AB

$\Gamma(f_0(1500)f_0(1710))/\Gamma_{\text{total}}$

VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT
<0.7	90	30 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$
30 ABLIKIM 05Q reports $< 0.73 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500)f_0(1710))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ . The $f_0$ mesons are identified via $f_0(1500) \rightarrow \pi^+\pi^-$ and $f_0(1710) \rightarrow K^+K^-$ decays. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result.				

$\Gamma_{20}/\Gamma$

NODE=M056R35  
NODE=M056R35

NODE=M056R35;LINKAGE=AB

$\Gamma(K^+K^-\pi^0\pi^0)/\Gamma_{\text{total}}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.55±0.09 OUR AVERAGE</b>				$[(0.56 \pm 0.09)\% \text{ OUR 2012 AVERAGE}]$
<b>0.55±0.09±0.02</b>	213.5	31 HE	08B CLEO	$e^+e^- \rightarrow \gamma h^+h^-h^0h^0$
31 HE 08B reports $0.59 \pm 0.05 \pm 0.08 \pm 0.03 \%$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+K^-\pi^0\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				

$\Gamma_{22}/\Gamma$

NODE=M056R64  
NODE=M056R64

NEW

NODE=M056R64;LINKAGE=HE

$\Gamma(K^+\pi^-\kappa^0\pi^0+c.c.)/\Gamma_{\text{total}}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>2.47±0.33 OUR AVERAGE</b>				$[(2.52 \pm 0.34)\% \text{ OUR 2012 AVERAGE}]$
<b>2.47±0.32±0.08</b>	401.7	32 HE	08B CLEO	$e^+e^- \rightarrow \gamma h^+h^-h^0h^0$
32 HE 08B reports $2.64 \pm 0.15 \pm 0.31 \pm 0.14 \%$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+\pi^-\kappa^0\pi^0+c.c.)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				

$\Gamma_{23}/\Gamma$

NODE=M056R66  
NODE=M056R66

NEW

NODE=M056R66;LINKAGE=HE

$\Gamma(\rho^+K^-K^0+c.c.)/\Gamma_{\text{total}}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1.20±0.21 OUR AVERAGE</b>				$[(1.22 \pm 0.21)\% \text{ OUR 2012 AVERAGE}]$
<b>1.20±0.21±0.04</b>	179.7	33 HE	08B CLEO	$e^+e^- \rightarrow \gamma h^+h^-h^0h^0$
33 HE 08B reports $1.28 \pm 0.16 \pm 0.15 \pm 0.07 \%$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \rho^+K^-K^0+c.c.)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				

$\Gamma_{24}/\Gamma$

NODE=M056R67  
NODE=M056R67

NEW

NODE=M056R67;LINKAGE=HE

$\Gamma(K^*(892)^- K^+ \pi^0 \rightarrow K^+ \pi^- K^0 \pi^0 + \text{c.c.})/\Gamma_{\text{total}}$ 

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{25}/\Gamma$
<b>0.46±0.12 OUR AVERAGE</b>				$[(0.47 \pm 0.12)\% \text{ OUR 2012 AVERAGE}]$	
<b>0.46±0.12±0.01</b>	64.1	34 HE	08B CLEO	$e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$	

34 HE 08B reports  $0.49 \pm 0.10 \pm 0.07 \pm 0.03\%$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^*(892)^- K^+ \pi^0 \rightarrow K^+ \pi^- K^0 \pi^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

 $\Gamma(K_S^0 K_S^0 \pi^+ \pi^-)/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{26}/\Gamma$
<b>5.7±1.1 OUR AVERAGE</b>				$[(5.8 \pm 1.1) \times 10^{-3} \text{ OUR 2012 AVERAGE}]$	
<b>5.7±1.0±0.2</b>	152 ± 14	35 ABLIKIM	050 BES2	$\psi(2S) \rightarrow \gamma \chi_{c0}$	

35 ABLIKIM 050 reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K_S^0 K_S^0 \pi^+ \pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (0.558 \pm 0.051 \pm 0.089) \times 10^{-3}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

 $\Gamma(K^+ K^- \eta \pi^0)/\Gamma_{\text{total}}$ 

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{27}/\Gamma$
<b>0.30±0.07±0.01</b>	56.4	36 HE	08B CLEO	$e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$	

36 HE 08B reports  $0.32 \pm 0.05 \pm 0.05 \pm 0.02\%$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \eta \pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

 $\Gamma(3(\pi^+ \pi^-))/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	DOCUMENT ID	TECN	COMMENT	$\Gamma_{28}/\Gamma$
<b>12.0±1.8 OUR EVALUATION</b>			Treating systematic error as correlated.	
<b>12.0±1.7 OUR AVERAGE</b>				

11.7±1.0±1.9  
12.5±2.9±0.5

37 BAI 99B BES  $\psi(2S) \rightarrow \gamma \chi_{c0}$   
37 TANENBAUM 78 MRK1  $\psi(2S) \rightarrow \gamma \chi_{c0}$

37 Rescaled by us using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.4 \pm 0.4)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-) = (32.6 \pm 0.5)\%$ .

 $\Gamma(K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.})/\Gamma_{\text{total}}$ 

VALUE	DOCUMENT ID	$\Gamma_{29}/\Gamma$
<b>0.0073±0.0016 OUR FIT</b>		

 $\Gamma(K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{30}/\Gamma$
<b>1.7 <math>\pm 0.6</math> <math>\pm 0.1</math></b>	64	38 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$	

• • • We do not use the following data for averages, fits, limits, etc. • • •

1.56±0.40±0.05 30.1±5.7 39,40 ABLIKIM 04H BES Repl. by ABLIKIM 05Q

38 ABLIKIM 05Q reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (0.168 \pm 0.035^{+0.047}_{-0.040}) \times 10^{-3}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

39 Assumes  $B(K^*(892)^0 \rightarrow K^- \pi^+) = 2/3$ .

40 ABLIKIM 04H reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (1.53 \pm 0.29 \pm 0.26) \times 10^{-4}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

 $\Gamma(\pi\pi)/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	DOCUMENT ID	$\Gamma_{31}/\Gamma$
<b>8.5±0.4 OUR FIT</b>		

 $\Gamma(\eta\eta)/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	DOCUMENT ID	$\Gamma_{34}/\Gamma$
<b>3.01±0.20 OUR FIT</b>		

$[(3.03 \pm 0.21) \times 10^{-3} \text{ OUR 2012 FIT}]$

NODE=M056R68

NODE=M056R68

NEW

NODE=M056R68;LINKAGE=HE

NODE=M056R47

NODE=M056R47

NEW

NODE=M056R47;LINKAGE=AB

NODE=M056R69

NODE=M056R69

NODE=M056R69;LINKAGE=HE

NODE=M056R4

NODE=M056R4

→ UNCHECKED ←

NODE=M056R;LINKAGE=X1

NODE=M056R10

NODE=M056R10

NODE=M056R26

NODE=M056R26

NODE=M056R26;LINKAGE=AI

NODE=M056R;LINKAGE=AL

NODE=M056R26;LINKAGE=AB

NODE=M056R22

NODE=M056R22

NODE=M056R13

NODE=M056R13

NEW

$\Gamma(\eta\eta)/\Gamma(\pi\pi)$ 

VALUE	DOCUMENT ID	TECN	COMMENT	$\Gamma_{34}/\Gamma_{31}$
<b>0.356±0.025 OUR FIT</b>				

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.26 ± 0.09	+0.03 -0.02	41 ANDREOTTI	05C E835	$\bar{p}p \rightarrow 2 \text{ mesons}$
0.24 ± 0.10	± 0.08	41 BAI	03C BES	$\psi(2S) \rightarrow 5\gamma$

41 We have multiplied  $\pi^0\pi^0$  measurement by 3 to obtain  $\pi\pi$ .

 $\Gamma(\eta\eta')/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{35}/\Gamma$
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**<0.23 (CL = 90%)** [ $<0.24 \times 10^{-3}$  (CL = 90%) OUR 2012 BEST LIMIT]

**<0.23** 90 35 ± 13 42 ASNER 09 CLEO  $\psi(2S) \rightarrow \gamma\eta'\eta$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.5	90	43 ADAMS	07 CLEO	$\psi(2S) \rightarrow \gamma\chi_{c0}$	
42 ASNER 09 reports $< 0.25 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .					NODE=M056R03;LINKAGE=AS
43 Superseded by ASNER 09. ADAMS 07 reports $< 0.5 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .					NODE=M056R03;LINKAGE=AD

 $\Gamma(\eta'\eta')/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{36}/\Gamma$
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**1.99±0.22 OUR AVERAGE** [ $(2.02 \pm 0.22) \times 10^{-3}$  OUR 2012 AVERAGE]

**1.99±0.21±0.06** 0.4k 44 ASNER 09 CLEO  $\psi(2S) \rightarrow \gamma\eta'\eta'$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1.59±0.41±0.05	23	45 ADAMS	07 CLEO	$\psi(2S) \rightarrow \gamma\chi_{c0}$	
44 ASNER 09 reports $(2.12 \pm 0.13 \pm 0.21) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \eta'\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					NODE=M056R04;LINKAGE=AS
45 Superseded by ASNER 09. ADAMS 07 reports $(1.7 \pm 0.4 \pm 0.2) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \eta'\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 0.0922 \pm 0.0011 \pm 0.0046$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					NODE=M056R04;LINKAGE=AD

 $\Gamma(\omega\omega)/\Gamma_{\text{total}}$ 

VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{37}/\Gamma$
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**0.96±0.11 OUR AVERAGE**

$[(0.98 \pm 0.11) \times 10^{-3}$  OUR 2012 AVERAGE]

0.93±0.11±0.03	991	46 ABLIKIM	11K BES3	$\psi(2S) \rightarrow \gamma \text{ hadrons}$	
2.2 ± 0.7 ± 0.1	38.1 ± 9.6	47 ABLIKIM	05N BES2	$\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma 6\pi$	
46 ABLIKIM 11K reports $(0.95 \pm 0.03 \pm 0.11) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \omega\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					NODE=M056R27;LINKAGE=AL
47 ABLIKIM 05N reports $[\Gamma(\chi_{c0}(1P) \rightarrow \omega\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (0.212 \pm 0.053 \pm 0.037) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					NODE=M056R27;LINKAGE=AB

 $\Gamma(\omega\phi)/\Gamma_{\text{total}}$ 

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	$\Gamma_{38}/\Gamma$
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**1.17±0.22 OUR AVERAGE**  $[(1.19 \pm 0.22) \times 10^{-4}$  OUR 2012 AVERAGE]

**1.17±0.22±0.04** 76 48 ABLIKIM 11K BES3  $\psi(2S) \rightarrow \gamma \text{ hadrons}$

48 ABLIKIM 11K reports $(1.2 \pm 0.1 \pm 0.2) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \omega\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					NODE=M056R76;LINKAGE=AL
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NODE=M056R20

NODE=M056R20

NODE=M056R;LINKAGE=D1

NODE=M056R03

NODE=M056R03

NODE=M056R03;LINKAGE=AS

NODE=M056R03;LINKAGE=AD

NODE=M056R04

NODE=M056R04

NEW

NODE=M056R04;LINKAGE=AS

NODE=M056R04;LINKAGE=AD

NODE=M056R27

NODE=M056R27

NEW

NODE=M056R27;LINKAGE=AL

NODE=M056R76

NODE=M056R76

NEW

$\Gamma(K^+K^-)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>DOCUMENT ID</u>
<b><math>5.98 \pm 0.34</math> OUR FIT</b> [( $6.06 \pm 0.35$ ) $\times 10^{-3}$ OUR 2012 FIT]	

 $\Gamma_{39}/\Gamma$ 

NODE=M056R6

NODE=M056R6

NEW

 $\Gamma(K_S^0 K_S^0)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>DOCUMENT ID</u>
<b><math>3.10 \pm 0.18</math> OUR FIT</b> [( $3.14 \pm 0.18$ ) $\times 10^{-3}$ OUR 2012 FIT]	

 $\Gamma_{40}/\Gamma$ 

NODE=M056R15

NODE=M056R15

NEW

 $\Gamma(K_S^0 K_S^0)/\Gamma(\pi\pi)$ 

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>0.367 \pm 0.022</math> OUR FIT</b> [ $0.369 \pm 0.022$ OUR 2012 FIT]			

 $\Gamma_{40}/\Gamma_{31}$ 

NODE=M056R53

NODE=M056R53

NEW

 $\Gamma(K_S^0 K_S^0)/\Gamma(K^+K^-)$ 

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>0.519 \pm 0.035</math> OUR FIT</b>			

 $\Gamma_{40}/\Gamma_{39}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.20</b>	90	53 ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;1.0</b>	90	54 ABLIKIM	06R BES2	$\psi(2S) \rightarrow \gamma \chi_{c0}$

53 ATHAR 07 reports  $< 0.21 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+ \pi^- \eta) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

54 ABLIKIM 06R reports  $< 1.1 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+ \pi^- \eta) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

 $\Gamma_{41}/\Gamma$  $\Gamma(\pi^+ \pi^- \eta)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.4</b>	90	55 ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$

55 ATHAR 07 reports  $< 0.38 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+ \pi^- \eta') / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

 $\Gamma_{42}/\Gamma$  $\Gamma(\bar{K}^0 K^+ \pi^- + \text{c.c.})/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.09 (CL = 90%)</b>	[ $<0.10 \times 10^{-3}$ (CL = 90%) OUR 2012 BEST LIMIT]			

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.09</b>	90	56 ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.7</b>	90	57,58 ABLIKIM	06R BES2	$\psi(2S) \rightarrow \gamma \chi_{c0}$

56 ATHAR 07 reports  $< 0.10 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \bar{K}^0 K^+ \pi^- + \text{c.c.}) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

57 ABLIKIM 06R reports  $< 0.70 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \bar{K}^0 K^+ \pi^- + \text{c.c.}) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

58 We have multiplied the  $K_S^0 K^+ \pi^-$  measurement by a factor of 2 to convert to  $K^0 K^+ \pi^-$ .

59 Rescaled by us using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.4 \pm 0.4)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-) = (32.6 \pm 0.5)\%$ .

 $\Gamma_{43}/\Gamma$ 

NODE=M056R51

NODE=M056R51

NODE=M056R51;LINKAGE=AT

NODE=M056R17;LINKAGE=AT

NODE=M056R17;LINKAGE=AB

NODE=M056R17;LINKAGE=BA

NODE=M056R17;LINKAGE=X1

$\Gamma(K^+ K^- \pi^0)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.06</b>	90	60 ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$
60 ATHAR 07 reports $< 0.06 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .				

 $\Gamma_{44}/\Gamma$ NODE=M056R05  
NODE=M056R05 $\Gamma(K^+ K^- \eta)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.22 (CL = 90%)</b>	$[<0.23 \times 10^{-3} (\text{CL} = 90\%) \text{ OUR 2012 BEST LIMIT}]$			
<b>&lt;0.22</b>	90	61 ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$
61 ATHAR 07 reports $< 0.24 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .				

 $\Gamma_{45}/\Gamma$ NODE=M056R09  
NODE=M056R09 $\Gamma(K^+ K^- K_S^0 K_S^0)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>1.40±0.47±0.04</b>	$16.8 \pm 4.8$	62 ABLIKIM	050 BES2	$\psi(2S) \rightarrow \gamma \chi_{c0}$
62 ABLIKIM 050 reports $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- K_S^0 K_S^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (0.138 \pm 0.039 \pm 0.025) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				

 $\Gamma_{46}/\Gamma$ NODE=M056R48  
NODE=M056R48 $\Gamma(K^+ K^- K^+ K^-)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>DOCUMENT ID</u>
<b>2.77±0.29 OUR FIT</b>	$[(2.79 \pm 0.29) \times 10^{-3} \text{ OUR 2012 FIT}]$

 $\Gamma_{47}/\Gamma$ NODE=M056R14  
NODE=M056R14

NEW

 $\Gamma(K^+ K^- \phi)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.96±0.25 OUR AVERAGE</b>	$[(0.98 \pm 0.25) \times 10^{-3} \text{ OUR 2012 AVERAGE}]$			
<b>0.96±0.25±0.03</b>	38	63 ABLIKIM	06T BES2	$\psi(2S) \rightarrow \gamma K^+ K^- \phi$
63 ABLIKIM 06T reports $(1.03 \pm 0.22 \pm 0.15) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				

 $\Gamma_{48}/\Gamma$ NODE=M056R01  
NODE=M056R01

NEW

 $\Gamma(\phi\phi)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>DOCUMENT ID</u>
<b>0.79±0.08 OUR FIT</b>	$[(0.82 \pm 0.08) \times 10^{-3} \text{ OUR 2012 FIT}]$

 $\Gamma_{49}/\Gamma$ NODE=M056R16  
NODE=M056R16

NEW

 $\Gamma(p\bar{p})/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-4}</math>)</u>	<u>DOCUMENT ID</u>
<b>2.13±0.12 OUR FIT</b>	$[(2.23 \pm 0.13) \times 10^{-4} \text{ OUR 2012 FIT}]$

 $\Gamma_{50}/\Gamma$ NODE=M056R11  
NODE=M056R11

NEW

 $\Gamma(p\bar{p}\pi^0)/\Gamma_{\text{total}}$ 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.69±0.07 OUR AVERAGE</b>			Error includes scale factor of 1.2. $[(0.70 \pm 0.07) \times 10^{-3} \text{ OUR 2012 AVERAGE Scale factor} = 1.2]$
0.73±0.06±0.02	64 ONYISI	10 CLE3	$\psi(2S) \rightarrow \gamma p\bar{p}\pi^0$
0.55±0.12±0.02	65 ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$
64 ONYISI 10 reports $(7.76 \pm 0.37 \pm 0.51 \pm 0.39) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.			
65 ATHAR 07 reports $(0.59 \pm 0.10 \pm 0.08) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.			

 $\Gamma_{51}/\Gamma$ NODE=M056R06  
NODE=M056R06

NEW

NODE=M056R06;LINKAGE=ON

NODE=M056R06;LINKAGE=AT

$\Gamma(p\bar{p}\eta)/\Gamma_{\text{total}}$					$\Gamma_{52}/\Gamma$
VALUE (units $10^{-3}$ )	DOCUMENT ID	TECN	COMMENT		
<b>0.35±0.04 OUR AVERAGE</b>					
$[(0.36 \pm 0.04) \times 10^{-3}$ OUR 2012 AVERAGE]					
0.35±0.04±0.01	66 ONYISI	10 CLE3	$\psi(2S) \rightarrow \gamma p\bar{p}X$		NODE=M056R50 NODE=M056R50 NEW
0.37±0.11±0.01	67 ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$		
66 ONYISI 10 reports $(3.73 \pm 0.38 \pm 0.28 \pm 0.19) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				NODE=M056R50;LINKAGE=ON	
67 ATHAR 07 reports $(0.39 \pm 0.11 \pm 0.04) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				NODE=M056R50;LINKAGE=AT	

$\Gamma(p\bar{p}\omega)/\Gamma_{\text{total}}$					$\Gamma_{53}/\Gamma$
VALUE (units $10^{-3}$ )	DOCUMENT ID	TECN	COMMENT		
<b>0.52±0.06 OUR AVERAGE</b>					
$[(0.53 \pm 0.06) \times 10^{-3}$ OUR 2012 AVERAGE]					
<b>0.52±0.06±0.02</b>	68 ONYISI	10 CLE3	$\psi(2S) \rightarrow \gamma p\bar{p}X$		NODE=M056R70 NODE=M056R70 NEW
68 ONYISI 10 reports $(5.57 \pm 0.48 \pm 0.42 \pm 0.14) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				NODE=M056R70;LINKAGE=ON	

$\Gamma(p\bar{p}\phi)/\Gamma_{\text{total}}$					$\Gamma_{54}/\Gamma$
VALUE (units $10^{-5}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>6.0±1.4 OUR AVERAGE</b>					
$[(6.1 \pm 1.5) \times 10^{-5}$ OUR 2012 AVERAGE]					
<b>6.0±1.4±0.2</b>	42 ± 8	69 ABLIKIM	11F BES3	$\psi(2S) \rightarrow \gamma p\bar{p}K^+ K^-$	NODE=M056R75 NODE=M056R75 NEW
69 ABLIKIM 11F reports $(6.12 \pm 1.18 \pm 0.86) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.				NODE=M056R75;LINKAGE=AB	

$\Gamma(p\bar{p}\pi^+\pi^-)/\Gamma_{\text{total}}$					$\Gamma_{55}/\Gamma$
VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>2.1 ± 0.7 OUR EVALUATION</b>				Error includes scale factor of 1.4. Treating systematic error as correlated.	
<b>2.1 ± 1.0 OUR AVERAGE</b>				Error includes scale factor of 2.0.	
1.57±0.21±0.53	70 BAI	99B BES	$\psi(2S) \rightarrow \gamma\chi_{c0}$		NODE=M056R7 NODE=M056R7 → UNCHECKED ←
4.20±1.15±0.18	70 TANENBAUM	78 MRK1	$\psi(2S) \rightarrow \gamma\chi_{c0}$		
70 Rescaled by us using $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ and $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$ .					NODE=M056R7;LINKAGE=X1

$\Gamma(p\bar{p}\pi^0\pi^0)/\Gamma_{\text{total}}$					$\Gamma_{56}/\Gamma$
VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>0.103±0.028 OUR AVERAGE</b>					
$[(0.105 \pm 0.028)\% \text{ OUR 2012 AVERAGE}]$					
<b>0.103±0.028±0.003</b>	39.5	71 HE	08B CLEO	$e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$	NODE=M056R65 NODE=M056R65 NEW
71 HE 08B reports $0.11 \pm 0.02 \pm 0.02 \pm 0.01\%$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\pi^0\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					NODE=M056R65;LINKAGE=HE

$\Gamma(p\bar{p}K^+K^- \text{(non-resonant)})/\Gamma_{\text{total}}$					$\Gamma_{57}/\Gamma$
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>1.21±0.26 OUR AVERAGE</b>					
$[(1.23 \pm 0.27) \times 10^{-4} \text{ OUR 2012 AVERAGE}]$					
<b>1.21±0.26±0.04</b>	48 ± 8	72 ABLIKIM	11F BES3	$\psi(2S) \rightarrow \gamma p\bar{p}K^+ K^-$	NODE=M056R72 NODE=M056R72 NEW
72 ABLIKIM 11F reports $(1.24 \pm 0.20 \pm 0.18) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}K^+ K^- \text{(non-resonant)})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					NODE=M056R72;LINKAGE=AB

$\Gamma(p\bar{p}K_S^0 K_S^0)/\Gamma_{\text{total}}$					$\Gamma_{58}/\Gamma$
VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;8.8</b>	90	73	ABLIKIM	06D BES2	$\psi(2S) \rightarrow \chi_{c0}\gamma$
73 Using $B(\psi(2S) \rightarrow \chi_{c0}\gamma) = (9.2 \pm 0.5)\%$					

$\Gamma(p\bar{n}\pi^-)/\Gamma_{\text{total}}$					$\Gamma_{59}/\Gamma$
VALUE (units $10^{-4}$ )	DOCUMENT ID		TECN	COMMENT	
<b>11.2±3.1 OUR AVERAGE</b>	$[(11.4 \pm 3.1) \times 10^{-4}$ OUR 2012 AVERAGE]				
<b>11.2±3.0±0.3</b>	74	ABLIKIM	06I BES2	$\psi(2S) \rightarrow \gamma p\pi^- X$	
74 ABLIKIM 06I reports $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{n}\pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (1.10 \pm 0.24 \pm 0.18) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(\Lambda\bar{\Lambda})/\Gamma_{\text{total}}$					$\Gamma_{60}/\Gamma$
VALUE (units $10^{-4}$ )	DOCUMENT ID		TECN	COMMENT	
<b>3.3±0.4 OUR FIT</b>					

$\Gamma(\Lambda\bar{\Lambda}\pi^+\pi^-)/\Gamma_{\text{total}}$					$\Gamma_{61}/\Gamma$
VALUE (units $10^{-3}$ )	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;4.0</b>	90	75	ABLIKIM	06D BES2	$\psi(2S) \rightarrow \chi_{c0}\gamma$
75 Using $B(\psi(2S) \rightarrow \chi_{c0}\gamma) = (9.2 \pm 0.5)\%$					

$\Gamma(K^+\bar{p}\Lambda+c.c.)/\Gamma_{\text{total}}$					$\Gamma_{62}/\Gamma$
VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>1.24±0.12 OUR AVERAGE</b>	Error includes scale factor of 1.3.	$[(1.02 \pm 0.19) \times 10^{-3}$ OUR 2012 AVERAGE]			
1.30±0.09±0.04	9k	76,77	ABLIKIM	13D BES3	$\psi(2S) \rightarrow \gamma\Lambda\bar{p}K^+$
1.00±0.19±0.03		78	ATHAR	07 CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$
76 ABLIKIM 13D reports $(1.32 \pm 0.03 \pm 0.10) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+\bar{p}\Lambda+c.c.)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					
77 Using $B(\Lambda \rightarrow p\pi^-) = 63.9\%$					
78 ATHAR 07 reports $(1.07 \pm 0.17 \pm 0.12) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+\bar{p}\Lambda+c.c.)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(K^+\bar{p}\Lambda(1520)+c.c.)/\Gamma_{\text{total}}$					$\Gamma_{63}/\Gamma$
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>2.9±0.7 OUR AVERAGE</b>	$[(3.0 \pm 0.8) \times 10^{-4}$ OUR 2012 AVERAGE]				
<b>2.9±0.7±0.1</b>	62 ± 12	79	ABLIKIM	11F BES3	$\psi(2S) \rightarrow \gamma p\bar{p}K^+ K^-$
79 ABLIKIM 11F reports $(3.00 \pm 0.58 \pm 0.50) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+\bar{p}\Lambda(1520)+c.c.)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(\Lambda(1520)\bar{\Lambda}(1520))/\Gamma_{\text{total}}$					$\Gamma_{64}/\Gamma$
VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>3.1±1.2 OUR AVERAGE</b>	$[(3.2 \pm 1.2) \times 10^{-4}$ OUR 2012 AVERAGE]				
<b>3.1±1.2±0.1</b>	28 ± 10	80	ABLIKIM	11F BES3	$\psi(2S) \rightarrow \gamma p\bar{p}K^+ K^-$
80 ABLIKIM 11F reports $(3.18 \pm 1.11 \pm 0.53) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Lambda(1520)\bar{\Lambda}(1520))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] \text{ assuming } B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

NODE=M056R46  
NODE=M056R46

NODE=M056R;LINKAGE=AB

NODE=M056R49  
NODE=M056R49

NEW

NODE=M056R49;LINKAGE=AB

NODE=M056R23  
NODE=M056R23NODE=M056R44  
NODE=M056R44

NODE=M056R44;LINKAGE=AB

NODE=M056R07  
NODE=M056R07

NEW

NODE=M056R07;LINKAGE=AB

NODE=M056R73  
NODE=M056R73

NEW

NODE=M056R73;LINKAGE=AB

NODE=M056R74  
NODE=M056R74

NEW

NODE=M056R74;LINKAGE=AB

$\Gamma(\Sigma^0 \bar{\Sigma}^0)/\Gamma_{\text{total}}$					$\Gamma_{65}/\Gamma$
<u>VALUE (units <math>10^{-4}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>4.1±0.7 OUR AVERAGE</b> $[(4.2 \pm 0.7) \times 10^{-4}$ OUR 2012 AVERAGE]					
<b>4.1±0.7±0.1</b>	78 ± 10	81 NAIK	08 CLEO	$\psi(2S) \rightarrow \gamma \Sigma^0 \bar{\Sigma}^0$	
81 NAIK 08 reports $(4.41 \pm 0.56 \pm 0.47) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^0 \bar{\Sigma}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(\Sigma^+ \bar{\Sigma}^-)/\Gamma_{\text{total}}$					$\Gamma_{66}/\Gamma$
<u>VALUE (units <math>10^{-4}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>3.0±0.7 OUR AVERAGE</b> $[(3.1 \pm 0.7) \times 10^{-4}$ OUR 2012 AVERAGE]					
<b>3.0±0.7±0.1</b>	39 ± 7	82 NAIK	08 CLEO	$\psi(2S) \rightarrow \gamma \Sigma^+ \bar{\Sigma}^-$	
82 NAIK 08 reports $(3.25 \pm 0.57 \pm 0.43) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^+ \bar{\Sigma}^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(\Xi^0 \bar{\Xi}^0)/\Gamma_{\text{total}}$					$\Gamma_{67}/\Gamma$
<u>VALUE (units <math>10^{-4}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>3.1±0.8 OUR AVERAGE</b> $[(3.2 \pm 0.8) \times 10^{-4}$ OUR 2012 AVERAGE]					
<b>3.1±0.8±0.1</b>	23.3 ± 4.9	83 NAIK	08 CLEO	$\psi(2S) \rightarrow \gamma \Xi^0 \bar{\Xi}^0$	
83 NAIK 08 reports $(3.34 \pm 0.70 \pm 0.48) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^0 \bar{\Xi}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					

$\Gamma(\Xi^- \bar{\Xi}^+)/\Gamma_{\text{total}}$					$\Gamma_{68}/\Gamma$
<u>VALUE (units <math>10^{-4}</math>)</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>4.8±0.7 OUR AVERAGE</b> $[(4.9 \pm 0.7) \times 10^{-4}$ OUR 2012 AVERAGE]					
<b>4.8±0.7±0.1</b>	95 ± 11	84 NAIK	08 CLEO	$\psi(2S) \rightarrow \gamma \Xi^- \bar{\Xi}^+$	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<10.3	90	85 ABLIKIM	06D BES2	$\psi(2S) \rightarrow \chi_{c0} \gamma$	
84 NAIK 08 reports $(5.14 \pm 0.60 \pm 0.47) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^- \bar{\Xi}^+)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.84 \pm 0.31) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.					
85 Using $B(\psi(2S) \rightarrow \chi_{c0} \gamma) = (9.2 \pm 0.5)\%$					

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\pi\pi)/\Gamma_{\text{total}}$					$\Gamma_{50}/\Gamma \times \Gamma_{31}/\Gamma$
<u>VALUE (units <math>10^{-7}</math>)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>18.0±1.2 OUR FIT</b> $[(19.0 \pm 1.4) \times 10^{-7}$ OUR 2012 FIT]					
<b>15.3±2.4±0.8</b>		86 ANDREOTTI 03 E835	$\bar{p}p \rightarrow \chi_{c0} \rightarrow \pi^0 \pi^0$		
86 We have multiplied $B(p\bar{p}) \cdot B(\pi^0 \pi^0)$ measurement by 3 to obtain $B(p\bar{p}) \cdot B(\pi\pi)$ .					

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\pi^0 \eta)/\Gamma_{\text{total}}$					$\Gamma_{50}/\Gamma \times \Gamma_{32}/\Gamma$
<u>VALUE (units <math>10^{-7}</math>)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<0.4					
		ANDREOTTI 05C E835	$\bar{p}p \rightarrow \pi^0 \eta$		

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\pi^0 \eta')/\Gamma_{\text{total}}$					$\Gamma_{50}/\Gamma \times \Gamma_{33}/\Gamma$
<u>VALUE (units <math>10^{-7}</math>)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<2.5					
		ANDREOTTI 05C E835	$\bar{p}p \rightarrow \pi^0 \eta'$		

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\eta\eta)/\Gamma_{\text{total}}$					$\Gamma_{50}/\Gamma \times \Gamma_{34}/\Gamma$
<u>VALUE (units <math>10^{-7}</math>)</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>6.4±0.5 OUR FIT</b> $[(6.8 \pm 0.6) \times 10^{-7}$ OUR 2012 FIT]					
<b>4.0±1.2<sup>+0.5</sup><sub>-0.3</sub></b>		ANDREOTTI 05C E835	$\bar{p}p \rightarrow \eta\eta$		

NODE=M056R59

NODE=M056R59

NEW

NODE=M056R60

NODE=M056R60

NEW

NODE=M056R61

NODE=M056R61

NEW

NODE=M056R45

NODE=M056R45

NEW

NODE=M056R45;LINKAGE=AB

NODE=M056R21

NODE=M056R21

NEW

NODE=M056R42

NODE=M056R42

NEW

NODE=M056R40

NODE=M056R40

NEW

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\eta\eta)/\Gamma_{\text{total}}$ 

VALUE (units  $10^{-6}$ ) DOCUMENT ID TECN COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

$2.1^{+2.3}_{-1.5}$  ANDREOTTI 05C E835  $\bar{p}p \rightarrow \pi^0\eta$

 $\Gamma_{50}/\Gamma \times \Gamma_{35}/\Gamma$ 

NODE=M056R43

NODE=M056R43

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**RADIATIVE DECAYS**


---

 $\Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}}$ 

VALUE (units  $10^{-4}$ ) DOCUMENT ID TECN COMMENT

**$130 \pm 7$  OUR FIT**

$[(117 \pm 8) \times 10^{-4}$  OUR 2012 FIT]

• • • We do not use the following data for averages, fits, limits, etc. • • •

$200 \pm 20 \pm 20$  87 ADAM 05A CLEO  $e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$

87 Uses  $B(\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma\gamma J/\psi)$  from ADAM 05A and  $B(\psi(2S) \rightarrow \gamma\chi_{c0})$  from ATHAR 04.

 $\Gamma_{69}/\Gamma$ 

NODE=M056310

NODE=M056R8

NODE=M056R8

NEW

 $\Gamma(\gamma\rho^0)/\Gamma_{\text{total}}$ 

VALUE (units  $10^{-6}$ ) CL% EVTS DOCUMENT ID TECN COMMENT

$< 9$  90  $1.2 \pm 4.5$  88 BENNETT 08A CLEO  $\psi(2S) \rightarrow \gamma\gamma\rho^0$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$< 10$  90  $6 \pm 12$  89 ABLIKIM 11E BES3  $\psi(2S) \rightarrow \gamma\gamma\rho^0$

88 BENNETT 08A reports  $< 9.6 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

89 ABLIKIM 11E reports  $< 10.5 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

 $\Gamma_{70}/\Gamma$ 

NODE=M056R56

NODE=M056R56

NODE=M056R56;LINKAGE=BE

NODE=M056R56;LINKAGE=AB

 $\Gamma(\gamma\omega)/\Gamma_{\text{total}}$ 

VALUE (units  $10^{-6}$ ) CL% EVTS DOCUMENT ID TECN COMMENT

$< 8$  90  $0.0 \pm 2.8$  90 BENNETT 08A CLEO  $\psi(2S) \rightarrow \gamma\gamma\omega$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$< 13$  90  $5 \pm 11$  91 ABLIKIM 11E BES3  $\psi(2S) \rightarrow \gamma\gamma\omega$

90 BENNETT 08A reports  $< 8.8 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

91 ABLIKIM 11E reports  $< 12.9 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

 $\Gamma_{71}/\Gamma$ 

NODE=M056R57

NODE=M056R57

NODE=M056R57;LINKAGE=BE

NODE=M056R57;LINKAGE=AB

 $\Gamma(\gamma\phi)/\Gamma_{\text{total}}$ 

VALUE (units  $10^{-6}$ ) CL% EVTS DOCUMENT ID TECN COMMENT

$< 6$  90  $0.1 \pm 1.6$  92 BENNETT 08A CLEO  $\psi(2S) \rightarrow \gamma\gamma\phi$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$< 16$  90  $15 \pm 7$  93 ABLIKIM 11E BES3  $\psi(2S) \rightarrow \gamma\gamma\phi$

92 BENNETT 08A reports  $< 6.4 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

93 ABLIKIM 11E reports  $< 16.2 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.84 \times 10^{-2}$ .

 $\Gamma_{72}/\Gamma$ 

NODE=M056R58

NODE=M056R58

NODE=M056R58;LINKAGE=BE

NODE=M056R58;LINKAGE=AB

 $\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ 

VALUE (units  $10^{-4}$ ) CL% DOCUMENT ID TECN COMMENT

**$2.25 \pm 0.17$  OUR FIT**

$[(2.23 \pm 0.17) \times 10^{-4}$  OUR 2012 FIT]

• • • We do not use the following data for averages, fits, limits, etc. • • •

$< 7$  90 94 WICHT 08 BELL  $B^\pm \rightarrow K^\pm\gamma\gamma$

94 WICHT 08 reports  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\gamma)/\Gamma_{\text{total}}] \times [B(B^+ \rightarrow \chi_{c0}(1P)K^+)] < 0.11 \times 10^{-6}$  which we divide by our best value  $B(B^+ \rightarrow \chi_{c0}(1P)K^+) = 1.49 \times 10^{-4}$ .

 $\Gamma_{73}/\Gamma$ 

NODE=M056R1

NODE=M056R1

NEW

NODE=M056R1;LINKAGE=WI

$\Gamma(\gamma\gamma)/\Gamma(\gamma J/\psi(1S))$					$\Gamma_{73}/\Gamma_{69}$
VALUE (units $10^{-2}$ )	DOCUMENT ID		TECN	COMMENT	
<b>1.73±0.16 OUR FIT</b> [( $1.90 \pm 0.19$ ) $\times 10^{-2}$ OUR 2012 FIT]					
<b>2.0 ± 0.4 OUR AVERAGE</b>					
2.2 $\pm 0.4$ $^{+0.1}_{-0.2}$	95	ANDREOTTI 04	E835	$p\bar{p} \rightarrow \chi_{c0} \rightarrow \gamma\gamma$	
1.45 $\pm 0.74$	96	AMBROGIANI 00B	E835	$\bar{p}p \rightarrow \chi_{c2} \rightarrow \gamma\gamma, \gamma J/\psi$	
95 The values of $B(p\bar{p})B(\gamma\gamma)$ and $B(\gamma\gamma)B(\gamma J/\psi)$ measured by ANDREOTTI 04 are not independent. The latter is used in the fit because of smaller systematics.					
96 Calculated by us using $B(J/\psi(1S) \rightarrow e^+e^-) = 0.0593 \pm 0.0010$ .					

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}}$					$\Gamma_{50}/\Gamma \times \Gamma_{69}/\Gamma$
VALUE (units $10^{-7}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>27.8±1.7 OUR FIT</b> [( $26.2 \pm 1.7$ ) $\times 10^{-7}$ OUR 2012 FIT]					
<b>28.2±2.1 OUR AVERAGE</b>					
28.0 $\pm 1.9 \pm 1.3$	392	97,98,99	BAGNASCO 02	E835	$\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$
29.3 $^{+5.7}_{-4.7} \pm 1.5$	89	97,98	AMBROGIANI 99B		$\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$
97 Values in $(\Gamma(p\bar{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}})$ and $(\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}})$ are not independent. The latter is used in the fit since it is less correlated to the total width.					
98 Calculated by us using $B(J/\psi(1S) \rightarrow e^+e^-) = 0.0593 \pm 0.0010$ .					
99 Recalculated by ANDREOTTI 05A.					

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_{50}/\Gamma \times \Gamma_{73}/\Gamma$
VALUE (units $10^{-8}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>4.8 ± 0.5 OUR FIT</b> [( $5.0 \pm 0.5$ ) $\times 10^{-8}$ OUR 2012 FIT]					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
6.52 $\pm 1.18$ $^{+0.48}_{-0.72}$	100	ANDREOTTI 04	E835	$p\bar{p} \rightarrow \chi_{c0} \rightarrow \gamma\gamma$	
100 The values of $B(p\bar{p})B(\gamma\gamma)$ and $B(\gamma\gamma)B(\gamma J/\psi)$ measured by ANDREOTTI 04 are not independent. The latter is used in the fit because of smaller systematics.					

$\chi_{c0}(1P)$ CROSS-PARTICLE BRANCHING RATIOS					
$\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$					$\Gamma_{50}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$
VALUE (units $10^{-6}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>21.0±1.4 OUR FIT</b> [( $21.6 \pm 1.4$ ) $\times 10^{-6}$ OUR 2012 FIT]					
<b>23.7±1.8 OUR AVERAGE</b>					
23.7 $\pm 1.4 \pm 1.4$	383 $\pm 22$	101 NAIK	08 CLEO	$\psi(2S) \rightarrow \gamma p\bar{p}$	
23.6 $^{+3.7}_{-3.4} \pm 3.4$	89.5 $^{+14}_{-13}$	BAI	04F BES	$\psi(2S) \rightarrow \gamma\chi_{c0}(1P) \rightarrow \gamma\bar{p}p$	
101 Calculated by us. NAIK 08 reports $B(\chi_c^0 \rightarrow p\bar{p}) = (25.7 \pm 1.5 \pm 1.5 \pm 1.3) \times 10^{-5}$ using $B(\psi(2S) \rightarrow \gamma\chi_c^0) = (9.22 \pm 0.11 \pm 0.46)\%$ .					

$\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)$					$\Gamma_{50}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$
VALUE (units $10^{-5}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>6.2±0.4 OUR FIT</b> [( $6.4 \pm 0.4$ ) $\times 10^{-5}$ OUR 2012 FIT]					
<b>4.6±1.9</b>	102	BAI	98I BES	$\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma\bar{p}p$	
102 Calculated by us. The value for $B(\chi_{c0} \rightarrow p\bar{p})$ reported in BAI 98I is derived using $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$ and $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].					

$\Gamma(\chi_{c0}(1P) \rightarrow \Lambda\bar{\Lambda})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$					$\Gamma_{60}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$
VALUE (units $10^{-6}$ )	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>32 ± 4 OUR FIT</b>					
<b>31.2±3.3±2.0</b>	131 $\pm 12$	103 NAIK	08 CLEO	$\psi(2S) \rightarrow \gamma\Lambda\bar{\Lambda}$	
103 Calculated by us. NAIK 08 reports $B(\chi_c^0 \rightarrow \Lambda\bar{\Lambda}) = (33.8 \pm 3.6 \pm 2.2 \pm 1.7) \times 10^{-5}$ using $B(\psi(2S) \rightarrow \gamma\chi_c^0) = (9.22 \pm 0.11 \pm 0.46)\%$ .					

NODE=M056R18

NODE=M056R18

NEW

NODE=M056R;LINKAGE=AN

NODE=M056R;LINKAGE=7A

NODE=M056R19

NODE=M056R19

NEW

NODE=M056R;LINKAGE=KS

NODE=M056R19;LINKAGE=7A  
NODE=M056R19;LINKAGE=AN

NODE=M056R25

NODE=M056R25

NEW

NODE=M056230

NODE=M056B6

NODE=M056B6

NEW

NODE=M056B6;LINKAGE=NA

NODE=M056B1

NODE=M056B1

NEW

NODE=M056B;LINKAGE=B1

NODE=M056B20

NODE=M056B20

NODE=M056B20;LINKAGE=NA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \Lambda\bar{\Lambda})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{60}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-5}$ ) EVTS DOCUMENT ID TECN COMMENT

**9.4±1.1 OUR FIT**

$[(9.5 \pm 1.1) \times 10^{-5}$  OUR 2012 FIT]

**13.0 $^{+3.6}_{-3.5}$  $\pm 2.5$**      $15.2^{+4.2}_{-4.0}$     104 BAI    03E BES     $\psi(2S) \rightarrow \gamma\Lambda\bar{\Lambda}$

104 BAI 03E reports [  $B(\chi_c^0 \rightarrow \Lambda\bar{\Lambda}) B(\psi(2S) \rightarrow \gamma\chi_c^0) / B(\psi(2S) \rightarrow J/\psi\pi^+\pi^-)$  ]  $\times$   $[B^2(\Lambda \rightarrow \pi^- p) / B(J/\psi \rightarrow p\bar{p})] = (2.45^{+0.68}_{-0.65} \pm 0.46)\%$ . We calculate from this measurement the presented value using  $B(\Lambda \rightarrow \pi^- p) = (63.9 \pm 0.5)\%$  and  $B(J/\psi \rightarrow p\bar{p}) = (2.17 \pm 0.07) \times 10^{-3}$ .

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{69}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-2}$ ) EVTS DOCUMENT ID TECN COMMENT

**0.128 $\pm 0.007$  OUR FIT**

$[(0.113 \pm 0.008) \times 10^{-2}$  OUR 2012 FIT]

**0.131 $\pm 0.035$  OUR AVERAGE** Error includes scale factor of 3.9.  $[(0.073 \pm 0.018) \times 10^{-2}$  OUR 2012 AVERAGE]

0.151 $\pm 0.003$ $\pm 0.010$	4.3k	ABLIKIM	120	BES3	$\psi(2S) \rightarrow \gamma\chi_{c0}$
0.069 $\pm 0.018$	105	OREGLIA	82	CBAL	$\psi(2S) \rightarrow \gamma\chi_{c0}$
0.4 $\pm 0.3$	106	BRANDELIK	79B	DASP	$\psi(2S) \rightarrow \gamma\chi_{c0}$
0.16 $\pm 0.11$	106	BARTEL	78B	CNTR	$\psi(2S) \rightarrow \gamma\chi_{c0}$
3.3 $\pm 1.7$	107	BIDDICK	77	CNTR	$e^+ e^- \rightarrow \gamma X$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.125 $\pm 0.007$ $\pm 0.013$	560	108 MENDEZ	08	CLEO	$\psi(2S) \rightarrow \gamma\chi_{c0}$
0.18 $\pm 0.01$ $\pm 0.02$	172	109 ADAM	05A	CLEO	Repl. by MENDEZ 08

105 Recalculated by us using  $B(J/\psi(1S) \rightarrow \ell^+\ell^-) = 0.1181 \pm 0.0020$ .

106 Recalculated by us using  $B(J/\psi(1S) \rightarrow \mu^+\mu^-) = 0.0588 \pm 0.0010$ .

107 Assumes isotropic gamma distribution.

108 Not independent from other measurements of MENDEZ 08.

109 Not independent from other values reported by ADAM 05A.

NODE=M056B21

NODE=M056B21

NEW

NODE=M056B21;LINKAGE=BA

NODE=M056B2

NODE=M056B2

NEW

NEW

NODE=M056B;LINKAGE=3Q

NODE=M056B;LINKAGE=2Q

NODE=M056B;LINKAGE=EA

NODE=M056B2;LINKAGE=ME

NODE=M056B2;LINKAGE=AD

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\text{anything})}{\Gamma_{69}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_9^{\psi(2S)}}$$

$$\Gamma_{69}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_9^{\psi(2S)} = \Gamma_{69}/\Gamma \times \Gamma_{118}^{\psi(2S)}/(\Gamma_{11}^{\psi(2S)} + \Gamma_{12}^{\psi(2S)} + \Gamma_{13}^{\psi(2S)} + 0.348\Gamma_{119}^{\psi(2S)} + 0.198\Gamma_{120}^{\psi(2S)})$$

VALUE (units  $10^{-2}$ ) EVTS DOCUMENT ID TECN COMMENT

**0.213 $\pm 0.011$  OUR FIT**

$[(0.191 \pm 0.014) \times 10^{-2}$  OUR 2012 FIT]

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.201 $\pm 0.011$ $\pm 0.021$	560	110 MENDEZ	08	CLEO	$\psi(2S) \rightarrow \gamma\chi_{c0}$
0.31 $\pm 0.02$ $\pm 0.03$	172	ADAM	05A	CLEO	Repl. by MENDEZ 08

110 Not independent from other measurements of MENDEZ 08.

NODE=M056B7

NODE=M056B7

NODE=M056B7

NEW

NODE=M056B7;LINKAGE=ME

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{69}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-2}$ ) EVTS DOCUMENT ID TECN COMMENT

**0.376 $\pm 0.020$  OUR FIT**

$[(0.338 \pm 0.024) \times 10^{-2}$  OUR 2012 FIT]

**0.358 $\pm 0.020$  $\pm 0.037$**     560    MENDEZ    08    CLEO     $\psi(2S) \rightarrow \gamma\chi_{c0}$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.55 $\pm 0.04$ $\pm 0.06$	172	111 ADAM	05A	CLEO	Repl. by MENDEZ 08
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111 Not independent from other values reported by ADAM 05A.

NODE=M056B8

NODE=M056B8

NEW

NODE=M056B;LINKAGE=AD

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \gamma\gamma)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{73}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-5}$ ) EVTS DOCUMENT ID TECN COMMENT

**2.21 $\pm 0.19$  OUR FIT**

$[(2.16 \pm 0.19) \times 10^{-5}$  OUR 2012 FIT]

**2.21 $\pm 0.33$  OUR AVERAGE**

2.17 $\pm 0.32$ $\pm 0.10$	207 $\pm$ 31	ECKLUND	08A	CLEO	$\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow 3\gamma$
3.7 $\pm 1.8$ $\pm 1.0$		LEE	85	CBAL	$\psi(2S) \rightarrow \gamma\chi_{c0}$

NODE=M056B3

NODE=M056B3

NEW

$$\Gamma(\chi_{c0}(1P) \rightarrow \pi\pi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$$

$$\Gamma_{31}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$$

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
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**8.32±0.29 OUR FIT**

$[(8.25 \pm 0.29) \times 10^{-4}$  OUR 2012 FIT]

**8.80±0.34 OUR AVERAGE**

9.11±0.08±0.65	17k	112 ABLIKIM	10A BES3	$e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$
8.81±0.11±0.43	8.9k	113 ASNER	09 CLEO	$\psi(2S) \rightarrow \gamma\pi^+\pi^-$
8.13±0.19±0.89	2.8k	114 ASNER	09 CLEO	$\psi(2S) \rightarrow \gamma\pi^0\pi^0$

112 Calculated by us. ABLIKIM 10A reports  $B(\chi_{c0} \rightarrow \pi^0\pi^0) = (3.23 \pm 0.03 \pm 0.23 \pm 0.14) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ . We have multiplied the  $\pi^0\pi^0$  measurement by 3 to obtain  $\pi\pi$ .

113 Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow \pi^+\pi^-) = (6.37 \pm 0.08 \pm 0.31 \pm 0.32) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ . We have multiplied the  $\pi^+\pi^-$  measurement by 3/2 to obtain  $\pi\pi$ .

114 Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow \pi^0\pi^0) = (2.94 \pm 0.07 \pm 0.32 \pm 0.15) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ . We have multiplied the  $\pi^0\pi^0$  measurement by 3 to obtain  $\pi\pi$ .

$$\Gamma(\chi_{c0}(1P) \rightarrow \pi\pi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)$$

$$\Gamma_{31}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$$

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
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**24.4±0.9 OUR FIT**

$[(24.5 \pm 0.9) \times 10^{-4}$  OUR 2012 FIT]

**20.7±1.7 OUR AVERAGE**

23.9±2.7±4.1	97 ± 11	115 BAI	03C BES	$\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma\pi^0\pi^0$
20.2±1.1±1.5	720 ± 32	116 BAI	98I BES	$\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma\pi^+\pi^-$

115 We have multiplied  $\pi^0\pi^0$  measurement by 3 to obtain  $\pi\pi$ .

116 Calculated by us. The value for  $B(\chi_{c0} \rightarrow \pi^+\pi^-)$  reported in BAI 98I is derived using  $B(\psi' \rightarrow \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$  and  $B(\psi' \rightarrow J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D]. We have multiplied  $\pi^+\pi^-$  measurement by 3/2 to obtain  $\pi\pi$ .

$$\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$$

$$\Gamma_{34}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$$

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
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**2.96±0.18 OUR FIT**

$[(2.93 \pm 0.18) \times 10^{-4}$  OUR 2012 FIT]

**3.12±0.19 OUR AVERAGE**

3.23±0.09±0.23	2132	117 ABLIKIM	10A BES3	$e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$
2.93±0.12±0.29	0.9k	118 ASNER	09 CLEO	$\psi(2S) \rightarrow \gamma\eta\eta$

• • • We do not use the following data for averages, fits, limits, etc. • • •

2.86±0.46±0.37	48	119 ADAMS	07 CLEO	$\psi(2S) \rightarrow \gamma\chi_{c0}$
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117 Calculated by us. ABLIKIM 10A reports  $B(\chi_{c0} \rightarrow \eta\eta) = (3.44 \pm 0.10 \pm 0.24 \pm 0.13) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ .

118 Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow \eta\eta) = (3.18 \pm 0.13 \pm 0.31 \pm 0.16) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .

119 Superseded by ASNER 09. Calculated by us. The value of  $B(\chi_{c0}(1P) \rightarrow \eta\eta)$  reported by ADAMS 07 was derived using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46)\%$  (ATHAR 04).

$$\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)$$

$$\Gamma_{34}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$$

VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
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**0.87 ± 0.05 OUR FIT**

**0.578±0.241±0.158**

BAI	03C BES	$\psi(2S) \rightarrow \gamma\eta\eta$
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$$\Gamma(\chi_{c0}(1P) \rightarrow K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$$

$$\Gamma_{39}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}$$

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
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**5.89±0.28 OUR FIT**

$[(5.87 \pm 0.28) \times 10^{-4}$  OUR 2012 FIT]

**5.97±0.07±0.32**

8.1k	120 ASNER	09 CLEO	$\psi(2S) \rightarrow \gamma K^+K^-$
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120 Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow K^+K^-) = (6.47 \pm 0.08 \pm 0.35 \pm 0.32) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .

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NODE=M056B22;LINKAGE=AN

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NODE=M056B23

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NODE=M056B23;LINKAGE=AS

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{39}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-3}$ ) EVTS DOCUMENT ID TECN COMMENT

**1.73±0.08 OUR FIT**

$[(1.75 \pm 0.09) \times 10^{-3}$  OUR 2012 FIT]

**1.63±0.10±0.15** 774 ± 38 121 BAI 98I BES  $\psi(2S) \rightarrow \gamma K^+ K^-$

121 Calculated by us. The value for  $B(\chi_{c0} \rightarrow K^+ K^-)$  reported by BAI 98I is derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K_S^0 K_S^0)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{40}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-4}$ ) EVTS DOCUMENT ID TECN COMMENT

**3.05±0.15 OUR FIT**

$[(3.04 \pm 0.15) \times 10^{-4}$  OUR 2012 FIT]

**3.18±0.17 OUR AVERAGE**

3.22±0.07±0.17 2.1k 122 ASNER 09 CLEO  $\psi(2S) \rightarrow \gamma K_S^0 K_S^0$   
3.02±0.19±0.33 322 ABLIKIM 050 BES2  $\psi(2S) \rightarrow \gamma K_S^0 K_S^0$

122 Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow K_S^0 K_S^0) = (3.49 \pm 0.08 \pm 0.18 \pm 0.17) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K_S^0 K_S^0)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{40}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-4}$ ) DOCUMENT ID TECN COMMENT

**9.0±0.4 OUR FIT**

$[(9.1 \pm 0.5) \times 10^{-4}$  OUR 2012 FIT]

**5.6±0.8±1.3** 123 BAI 99B BES  $\psi(2S) \rightarrow \gamma K_S^0 K_S^0$

123 Calculated by us. The value of  $B(\chi_{c0} \rightarrow K_S^0 K_S^0)$  reported by BAI 99B was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_1/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-3}$ ) DOCUMENT ID TECN COMMENT

**6.5±0.5 OUR FIT**

**6.9±2.4 OUR AVERAGE** Error includes scale factor of 3.8.

4.4±0.1±0.9 124 BAI 99B BES  $\psi(2S) \rightarrow \gamma \chi_{c0}$   
9.3±0.9 125 TANENBAUM 78 MRK1  $\psi(2S) \rightarrow \gamma \chi_{c0}$

124 Calculated by us. The value for  $B(\chi_{c0} \rightarrow 2\pi^+ 2\pi^-)$  reported in BAI 99B is derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

125 The value  $B(\psi(1S) \rightarrow \gamma \chi_{c0}) \times B(\chi_{c0} \rightarrow 2\pi^+ 2\pi^-)$  reported in TANENBAUM 78 is derived using  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) \times B(J/\psi(1S) \rightarrow \ell^+\ell^-) = (4.6 \pm 0.7)\%$ . Calculated by us using  $B(J/\psi(1S) \rightarrow \ell^+\ell^-) = 0.1181 \pm 0.0020$ .

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \pi^+\pi^- K^+ K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_8/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-3}$ ) DOCUMENT ID TECN COMMENT

**1.74±0.14 OUR FIT**

$[(1.73 \pm 0.13) \times 10^{-3}$  OUR 2012 FIT]

**1.64±0.05±0.2** ABLIKIM 05Q BES2  $\psi(2S) \rightarrow \gamma \chi_{c0}$

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \pi^+\pi^- K^+ K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_8/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units  $10^{-3}$ ) DOCUMENT ID TECN COMMENT

**5.1 ± 0.4 OUR FIT**

$[(5.2 \pm 0.4) \times 10^{-3}$  OUR 2012 FIT]

**5.8 ± 1.6 OUR AVERAGE** Error includes scale factor of 2.3.

4.22±0.20±0.97 BAI 99B BES  $\psi(2S) \rightarrow \gamma \chi_{c0}$   
7.4 ± 1.0 126 TANENBAUM 78 MRK1  $\psi(2S) \rightarrow \gamma \chi_{c0}$

126 The reported value is derived using  $B(\psi(2S) \rightarrow \pi^+\pi^- J/\psi) \times B(J/\psi \rightarrow \ell^+\ell^-) = (4.6 \pm 0.7)\%$ . Calculated by us using  $B(J/\psi \rightarrow \ell^+\ell^-) = 0.1181 \pm 0.0020$ .

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NODE=M056B19;LINKAGE=TA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- K^+ K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{47}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
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**2.72±0.27 OUR FIT**[( $2.70 \pm 0.27$ )  $\times 10^{-4}$  OUR 2012 FIT]**3.20±0.11±0.41** 278 127 ABLIKIM 06T BES2  $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ 127 Calculated by us. The value of  $B(\chi_{c0} \rightarrow 2K^+ 2K^-)$  reported by ABLIKIM 06T was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.2 \pm 0.4)\%$ .

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- K^+ K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-) \Gamma_{47}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units $10^{-4}$ )	DOCUMENT ID	TECN	COMMENT
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**8.0±0.8 OUR FIT****6.1±0.8±0.9** 128 BAI 99B BES  $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ 128 Calculated by us. The value of  $B(\chi_{c0} \rightarrow 2K^+ 2K^-)$  reported by BAI 99B was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi \pi^+ \pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \phi\phi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{49}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
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**0.77±0.07 OUR FIT**[( $0.79 \pm 0.08$ )  $\times 10^{-4}$  OUR 2012 FIT]**0.78±0.08 OUR AVERAGE**0.77±0.03±0.08 612 129 ABLIKIM 11K BES3  $\psi(2S) \rightarrow \gamma$  hadrons  
0.86±0.19±0.12 26 130 ABLIKIM 06T BES2  $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ 129 Calculated by us. The value of  $B(\chi_{c0} \rightarrow \phi\phi)$  reported by ABLIKIM 11K was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.62 \pm 0.31)\%$ .130 Calculated by us. The value of  $B(\chi_{c0} \rightarrow \phi\phi)$  reported by ABLIKIM 06T was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.2 \pm 0.4)\%$ .

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \phi\phi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-)}{\Gamma_{49}/\Gamma \times \Gamma_{118}^{\psi(2S)}/\Gamma_{11}^{\psi(2S)}}$$

VALUE (units $10^{-4}$ )	DOCUMENT ID	TECN	COMMENT
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**2.27±0.21 OUR FIT**[( $2.35 \pm 0.23$ )  $\times 10^{-4}$  OUR 2012 FIT]**2.6 ±1.0 ±1.1** 131 BAI 99B BES  $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ 131 Calculated by us. The value of  $B(\chi_{c0} \rightarrow \phi\phi)$  reported by BAI 99B was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi \pi^+ \pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D]. **$\chi_{c0}(1P)$  REFERENCES**

ABLIKIM	13D	PR D87 012007	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	120	PRL 109 172002	M. Ablikim <i>et al.</i>	(BES III Collab.)
LIU	12B	PRL 108 232001	Z.Q. Liu <i>et al.</i>	(BELLE Collab.)
ABLIKIM	11A	PR D83 012006	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	11E	PR D83 112005	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	11F	PR D83 112009	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	11K	PRL 107 092001	M. Ablikim <i>et al.</i>	(BES III Collab.)
DEL-AMO-SA...	11M	PR D84 012004	P. del Amo Sanchez <i>et al.</i>	(BABAR Collab.)
ABLIKIM	10A	PR D81 052005	M. Ablikim <i>et al.</i>	(BES III Collab.)
ONYISI	10	PR D82 011103	P.U.E. Onyisi <i>et al.</i>	(CLEO Collab.)
UEHARA	10A	PR D82 114031	S. Uehara <i>et al.</i>	(BELLE Collab.)
ASNER	09	PR D79 072007	D.M. Asner <i>et al.</i>	(CLEO Collab.)
UEHARA	09	PR D79 052009	S. Uehara <i>et al.</i>	(BELLE Collab.)
BENNETT	08A	PRL 101 151801	J.V. Bennett <i>et al.</i>	(CLEO Collab.)
ECKLUND	08A	PR D78 091501	K.M. Ecklund <i>et al.</i>	(CLEO Collab.)
HE	08B	PR D78 092004	Q. He <i>et al.</i>	(CLEO Collab.)
MENDEZ	08	PR D78 011102	H. Mendez <i>et al.</i>	(CLEO Collab.)
NAIK	08	PR D78 031101	P. Naik <i>et al.</i>	(CLEO Collab.)
UEHARA	08	EPJ C53 1	S. Uehara <i>et al.</i>	(BELLE Collab.)
WICHT	08	PL B662 323	J. Wicht <i>et al.</i>	(BELLE Collab.)
ABE	07	PRL 98 082001	K. Abe <i>et al.</i>	(BELLE Collab.)
ADAMS	07	PR D75 071101	G.S. Adams <i>et al.</i>	(CLEO Collab.)
ATHAR	07	PR D75 032002	S.B. Athar <i>et al.</i>	(CLEO Collab.)
CHEN	07B	PL B651 15	W.T. Chen <i>et al.</i>	(BELLE Collab.)
ABLIKIM	06D	PR D73 052006	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06I	PR D74 012004	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06R	PR D74 072001	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06T	PL B642 197	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05G	PR D71 092002	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05N	PL B630 7	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05O	PL B630 21	M. Ablikim <i>et al.</i>	(BES Collab.)

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REFID=50846

ABLIKIM	05Q	PR D72 092002	M. Ablikim <i>et al.</i>	(BES Collab.)	REFID=50958
ADAM	05A	PRL 94 232002	N.E. Adam <i>et al.</i>	(CLEO Collab.)	REFID=50763
ANDREOTTI	05A	NP B717 34	M. Andreotti <i>et al.</i>	(FNAL E835 Collab.)	REFID=50769
ANDREOTTI	05C	PR D72 112002	M. Andreotti <i>et al.</i>	(FNAL E835 Collab.)	REFID=50991
NAKAZAWA	05	PL B615 39	H. Nakazawa <i>et al.</i>	(BELLE Collab.)	REFID=50807
ABE	04G	PR D70 071102	K. Abe <i>et al.</i>	(BELLE Collab.)	REFID=50182
ABLIKIM	04G	PR D70 092002	M. Ablikim <i>et al.</i>	(BES Collab.)	REFID=50187
ABLIKIM	04H	PR D70 092003	M. Ablikim <i>et al.</i>	(BES Collab.)	REFID=50188
ANDREOTTI	04	PL B584 16	M. Andreotti <i>et al.</i>	(E835 Collab.)	REFID=49744
ATHAR	04	PR D70 112002	S.B. Athar <i>et al.</i>	(CLEO Collab.)	REFID=50331
BAI	04F	PR D69 092001	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=49752
ANDREOTTI	03	PRL 91 091801	M. Andreotti <i>et al.</i>	(FNAL E835 Collab.)	REFID=49578
AULCHENKO	03	PL B573 63	V.M. Aulchenko <i>et al.</i>	(KEDR Collab.)	REFID=49579
BAI	03C	PR D67 032004	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=49190
BAI	03E	PR D67 112001	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=49416
ABE,K	02	PRL 89 142001	K. Abe <i>et al.</i>	(BELLE Collab.)	REFID=49188
BAGNASCO	02	PL B533 237	S. Bagnasco <i>et al.</i>	(FNAL E835 Collab.)	REFID=48833
EISENSTEIN	01	PRL 87 061801	B.I. Eisenstein <i>et al.</i>	(CLEO Collab.)	REFID=48344
AMBROGIANI	00B	PR D62 052002	M. Ambrogiani <i>et al.</i>	(FNAL E835 Collab.)	REFID=47940
AMBROGIANI	99B	PRL 83 2902	M. Ambrogiani <i>et al.</i>	(FNAL E835 Collab.)	REFID=47389
BAI	99B	PR D60 072001	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=47385
BAI	98D	PR D58 092006	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=46338
BAI	98I	PRL 81 3091	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=46343
GAISER	86	PR D34 711	J. Gaisser <i>et al.</i>	(Crystal Ball Collab.)	REFID=22012
LEE	85	SLAC 282	R.A. Lee	(SLAC)	REFID=40589
OREGLIA	82	PR D25 2259	M.J. Oreglia <i>et al.</i>	(SLAC, CIT, HARV+)	REFID=22120
BRANDELIK	79B	NP B160 426	R. Brandelik <i>et al.</i>	(DASP Collab.)	REFID=22115
BARTEL	78B	PL 79B 492	W. Bartel <i>et al.</i>	(DESY, HEIDP)	REFID=22111
TANENBAUM	78	PR D17 1731	W.M. Tanenbaum <i>et al.</i>	(SLAC, LBL)	REFID=22112
Also		Private Comm.	G. Trilling	(LBL, UCB)	REFID=22113
BIDDICK	77	PRL 38 1324	C.J. Biddick <i>et al.</i>	(UCSD, UMD, PAVI+)	REFID=22059